LG
Life's Good

Internal Use Only

North/Latin America http://aic.lgservice.com
Europe/Africa http://eic.lgservice.com
Asia/Oceania http://biz.lgservice.com

LED LCD TV
SERVICE MANUAL

CHASSIS : LA25C

MODEL : 55LS4500 55LS4500-UD

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

P/NO : MFL67454211 (1208-REV00)

Printed in Korea

CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

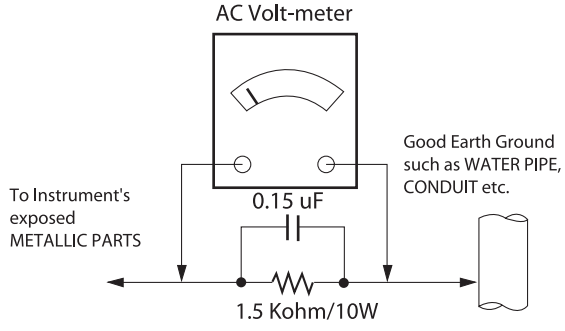
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω
*Base on Adjustment standard

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This spec sheet is applied LCD TV with LA25A/B/C chassis

2. Test condition

Each part is tested as below without special notice.

1) Temperature : 25 ºC ± 5 ºC(77 ± 9 ºF), CST : 40 ± 5 ºC
2) Relative Humidity: 65 % ± 10 %
3) Power Voltage
   - AC 110-240 V~, 50/60 Hz
   * Standard Voltage of each products is marked by models.
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety : UL, CSA, IEC specification
   - EMC: FCC, ICES, IEC specification

4. General Specification

No	Item	Specification		Remark
1	Receiving System	1) ATSC / NTSC-M		
2	Available Channel	1) VHF : 02~13		
		2) UHF : 14~69		
		3) DTV : 02-69		
		4) CATV : 01~135		
		5) CADTV : 01~135		
3	Input Voltage	1) AC 100 ~ 240V 50/60Hz		120V, 50/60Hz on the label (USA)
4	Market	NORTH AMERICA		
5	Screen Size	32/37/42 inch Wide (1920 × 1080)	FHD + 60Hz	42LS3400-UA
		22/26/32 inch Wide (1366 × 768)	HD + 60Hz	32LS3400-UA
6	Aspect Ratio	16:9		
7	Tuning System	FS		
8	Module(Direct LED)	LC320DXN-SER2	LGD	32LS3400-UA
		LC420DUN-SER2	LGD	42LS3400-UA
9	Operating Environment	1) Temp : 0 ~ 40 deg 2) Humidity : ~ 80 %		
10	Storage Environment	1) Temp : -20 ~ 60 deg 2) Humidity : ~ 85 %		

5. Supported video resolutions

5.1. Component input(Y, CB/PB, CR/PR)

No.	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed
1.	720*480	15.73	60.00	13.5135	SDTV ,DVD 480I
2.	720*480	15.73	59.94	13.50	SDTV ,DVD 480I
3.	720*480	31.50	60.00	27.027	SDTV 480P
4.	720*480	31.47	59.94	27.00	SDTV 480P
5.	1280*720	45.00	60.00	74.25	HDTV 720P
6.	1280*720	44.96	59.94	74.176	HDTV 720P
7.	1920*1080	33.75	60.00	74.25	HDTV 1080I
8.	1920*1080	33.72	59.94	74.176	HDTV 1080I
9.	1920*1080	67.50	60.00	148.50	HDTV 1080P
10.	1920*1080	67.432	59.94	148.352	HDTV 1080P
11.	1920*1080	27.00	24.00	74.25	HDTV 1080P
12.	1920*1080	26.97	23.94	74.176	HDTV 1080P
13.	1920*1080	33.75	30.00	74.25	HDTV 1080P
14.	1920*1080	33.71	29.97	74.176	HDTV 1080P

5.2. HDMI Input (DTV)

No.	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed
1.	720*480	31.47	60.00	27.027	SDTV 480P
2.	720*480	31.47	59.94	27.00	SDTV 480P
3.	1280*720	45.00	60.00	74.25	HDTV 720P
4.	1280*720	44.96	59.94	74.176	HDTV 720P
5.	1920*1080	33.75	60.00	74.25	HDTV 1080I
6.	1920*1080	33.72	59.94	74.176	HDTV 1080I
7.	1920*1080	67.50	60.00	148.50	HDTV 1080P
8.	1920*1080	67.432	59.94	148.352	HDTV 1080P
9.	1920*1080	27.00	24.00	74.25	HDTV 1080P
10.	1920*1080	26.97	23.976	74.176	HDTV 1080P
11.	1920*1080	33.75	30.00	74.25	HDTV 1080P
12.	1920*1080	33.71	29.97	74.176	HDTV 1080P

ADJUSTMENT INSTRUCTION

1. Application Range

This spec. sheet applies to LA25C Chassis applied LCD TV all models manufactured in TV factory.

2. Specification

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25 ±5 °C of temperature and 65±10% of relative humidity if there is no specific designation.
(4) The input voltage of the receiver must keep 100~240V, 50/60Hz.
(5) At first Worker must turn on the SET by using Power Only key.
(6) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15 °C
In case of keeping module is in the circumstance of 0°C, it should be placed in the circumstance of above 15°C for 2 hours
In case of keeping module is in the circumstance of below -20°C, it should be placed in the circumstance of above 15°C for 3 hours

[Caution]
When still image is displayed for a period of 20 minutes or longer (especially where W/B scale is strong.
Digital pattern 13ch and/or Cross hatch pattern 09ch), there can some afterimage in the black level area

3. Adjustment items

3.1. Main PCBA Adjustments

(1) ADC adjustment: Component 480i, 1080p / RGB-PC 1080p
(2) EDID downloads for HDMI and RGB-PC

3.2. Final assembly adjustment

(1) White Balance adjustment
(2) RS-232C functionality check
(3) Factory Option setting per destination
(4) Shipment mode setting (IN-STOP)
(5) GND and HI-POT test

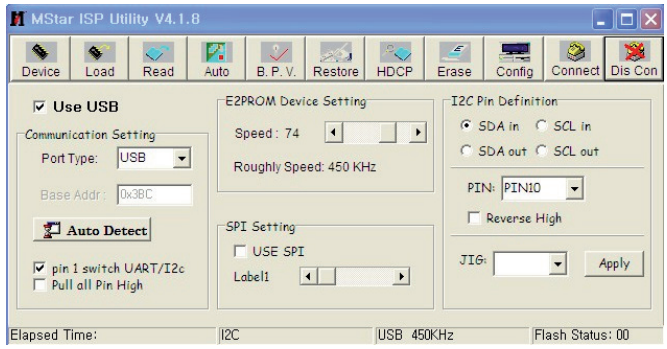
3.3. Appendix

(1) Shipment conditions
(2) Tool option menu
(3) USB Download (S/W Update, Option and Service only)
(4) Preset CH Information

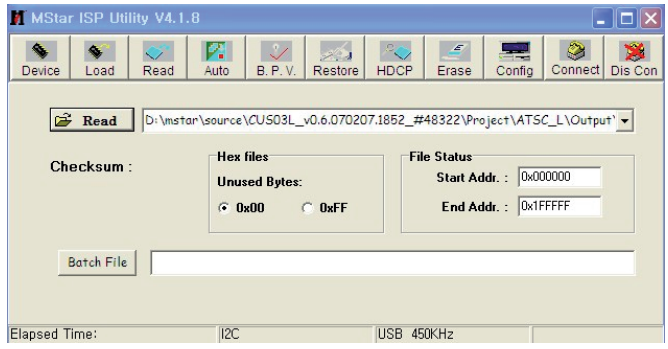
4. MAIN PCBA Adjustments

* Download

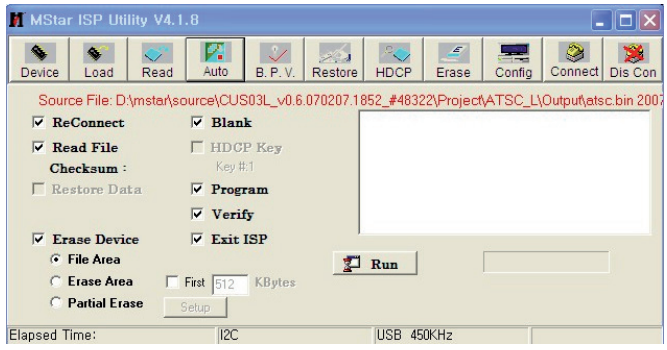
(1) Execute ISP program “Mstar ISP Utility” and then click “Config” tab.
(2) Set as below, and then click “Auto Detect” and check “OK” message. If display “Error”, Check connect computer, jig, and set.
(3) Click “Connect” tab. If display “Can’t ”, Check connect computer, jig, and set.



(4) Click “Read” tab, and then load download file(XXXX.bin) by clicking “Read”



(5) Click “Auto” tab and set as below
(6) Click “Run”.
(7) After downloading, check “OK” message.



4.1. ADC Calibration

4.1.1. Overview

▪ ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation

4.1.2. Equipment & Condition

(1) Protocol: RS-232C
(2) Inner Pattern
- Resolution : 1080p(Comp)
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level : 0.7±0.1 Vp-p

4.1.3. Adjustment

4.1.3.1. Adjustment method
- Connect to Jig by using RS-232, adjust Component

4.1.3.2. Adj. protocol

Protocol	CMD 1	CMD 2	Data 1	Data 2	Remark
Enter adj mode	a	a	00	00	When transfer the 'Mode In',Carry the command.
Start ADC adj	a	d	00	10	Automatically adjustment (Use internal pattern)

4.1.3.3. Manual ADC process using Service Remocon
After enter Service Mode by pushing "ADJ" key, execute "ADC Adjust" by pushing "►" key at " 0. ADC CALIBRATION ".

0. TOOL OPTION1
1. TOOL OPTION2
2. TOOL OPTION3
3. Country Group
4. ADC CALIBRATION
5. W/B ADJUST
6. EDID D/L (PCM)
7. SUB B/C ADJUST

※ Manual ADC Confirmation using Service Remocon. After enter Service Mode by pushing "INSTART" key,

ADJUST ADC (COMPONENT) : OK

4.2. EDID Download

4.2.1. Overview

▪ It is a VESA regulation. A PC or a MNT will display an optimal resolution through information sharing without any necessity of user input. It is a realization of "Plug and Play".

4.2.2. Equipment

(1) Since EDID data is embedded, EDID download JIG, HDMI cable and D-sub cable are not need.
(2) Adjust by using remote controller.

4.2.3. Download method (using DFT)

PC(for communication through RS-232C), UART baud rate: 115200 bps
Command : aa 00 00 (Start Factory mode)
Command : ae 00 10 (Download All EDID)
Command : aa 00 90 (End of Factory mode)

4.2.4. Download method (using Service Remocon)

(1) Press Adj. key on the Adj. R/C,
(2) Select EDID D/L menu.
(3) By pressing Enter key, EDID download will begin
(4) If Download is successful, OK is display, but If Download is failure, NG is displayed.
(5) If Download is failure, Re-try downloads.
※Caution: When EDID Download, must remove RGB/HDMI Cable.
(6) EDID Write confirmation

EDID D/L (PCM)
HDMI1 : OK
HDMI2 : OK

4.3. EDID DATA

4.3.1. North America (PCM)

4.3.1.1. FHD Model

4.3.1.1.1. 8BIT

■ HDMI 1-FHD-8BIT (C/S : E9CF)

EDID Block 0, Bytes 0-127 [00H-7FH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	16	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E9

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	19	F1	48	90	22	20	05	04	03	02	01	23	09	57
10	07	67	03	0C	00	10	00	80	1E	02	3A	80	18	71	38	2D
20	40	58	2C	04	05	40	84	63	00	00	1E	01	1D	80	18	71
30	1C	16	20	58	2C	25	00	40	84	63	00	00	9E	01	1D	00
40	72	51	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E	8C
50	0A	D0	8A	20	E0	2D	10	10	3E	96	00	40	84	63	00	00
60	18	26	36	80	A0	70	38	1F	40	30	20	25	00	40	84	63
70	00	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	CF

■ HDMI 2-FHD-8BIT (C/S : E9BF)

EDID Block 0, Bytes 0-127 [00H-7FH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	16	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E9

EDID Block 1, Bytes 128-255 [80H-FFH]]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	19	F1	48	90	22	20	05	04	03	02	01	23	09	57
10	07	67	03	0C	00	20	00	80	1E	02	3A	80	18	71	38	2D
20	40	58	2C	04	05	40	84	63	00	00	1E	01	1D	80	18	71
30	1C	16	20	58	2C	25	00	40	84	63	00	00	9E	01	1D	00
40	72	51	D0	1E	20	6E	28	55	00	40	84	63	00	00	1E	8C
50	0A	D0	8A	20	E0	2D	10	10	3E	96	00	40	84	63	00	00
60	18	26	36	80	A0	70	38	1F	40	30	20	25	00	40	84	63
70	00	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	BF

4.3.2. AC3 EDID Data

4.3.2.1. FHD Model

4.3.2.1.1. 8BIT

■ HDMI 1-FHD-8BIT (C/S : E95D)

EDID Block 0, Bytes 0-127 [00H-7FH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	16	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E9

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	1C	F1	48	90	22	20	05	04	03	02	01	26	15	07
10	50	09	57	07	67	03	0C	00	10	00	80	1E	02	3A	80	18
20	71	38	2D	40	58	2C	04	05	40	84	63	00	00	1E	01	1D
30	80	18	71	1C	16	20	58	2C	25	00	40	84	63	00	00	9E
40	01	1D	00	72	51	D0	1E	20	6E	28	55	00	40	84	63	00
50	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	40	84
60	63	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
70	40	84	63	00	00	1A	00	00	00	00	00	00	00	00	00	5D

■ HDMI 2-FHD-8BIT (C/S : E94D)

EDID Block 0, Bytes 0-127 [00H-7FH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	16	01	03	80	A0	5A	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	31	40	45	40	61	40	71	40	81	80
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	40	84	63	00	00	1E	66	21	50	B0	51	00	1B	30
50	40	70	36	00	40	84	63	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	E9

EDID Block 1, Bytes 128-255 [80H-FFH]

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	1C	F1	48	90	22	20	05	04	03	02	01	26	15	07
10	50	09	57	07	67	03	0C	00	20	00	80	1E	02	3A	80	18
20	71	38	2D	40	58	2C	04	05	40	84	63	00	00	1E	01	1D
30	80	18	71	1C	16	20	58	2C	25	00	40	84	63	00	00	9E
40	01	1D	00	72	51	D0	1E	20	6E	28	55	00	40	84	63	00
50	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	40	84
60	63	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
70	40	84	63	00	00	1A	00	00	00	00	00	00	00	00	00	4D

4.4. Tool Option Input

- Input Model Tool Option according to BOM

5. Final Assembly Adjustment

5.1. White Balance Adjustment

5.1.1. Overview

5.1.1.1. W/B adj. Objective & How-it-works

(1) Objective: To reduce each Panel's W/B deviation

(2) How-it-works: When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.

(3) Adj. condition: normal temperature

- Surrounding Temperature: 25±5 °C
- Warm-up time: About 5 Min
- Surrounding Humidity: 20% ~ 80%
- Before White balance adjustment, Keep power on status, don't power off

5.1.1.2. Adj. condition and cautionary items

(1) Lighting condition in surrounding area surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.

(2) Probe location: Color Analyzer (CA-210) probe should be within 10cm and perpendicular of the module surface (80°~ 100°)

(3) Aging time

- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

5.1.2. Equipment

(1) Color Analyzer: CA-210 (NCG: CH 9 / WCG: CH12 / LED: CH14)

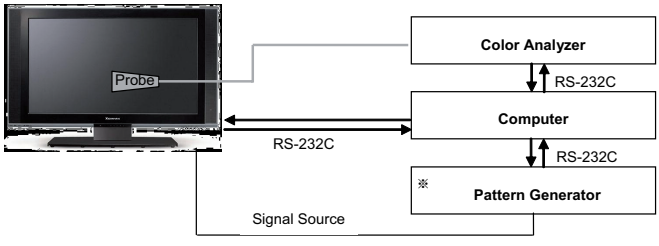
(2) Adj. Computer (During auto adj., RS-232C protocol is needed)

(3) Adjust Remocon

(4) Video Signal Generator MSPG-925F 720p/204-Gray (Model: 217, Pattern: 49)

※ Color Analyzer Matrix should be calibrated using CS-1000

5.1.3. Equipment connection



※If TV internal pattern is used, not needed

5.1.4. Adjustment Command (Protocol)

(1) RS-232C Command used during auto-adj.

RS-232C COMMAND			Explanation
CMD	DATA	ID	
Wb	00	00	Begin White Balance adj.
Wb	00	ff	End White Balance adj. (internal pattern disappears)

(2) Adjustment Map

	Adj. item	Command (lower caseASCII)		Data Range (Hex.)		Default (Decimal)
		CMD1	CMD2	MIN	MAX	
Cool	R Gain	j	g	00	C0	172
	G Gain	j	h	00	C0	172
	B Gain	j	i	00	C0	192
	R Cut					64
	G Cut					64
	B Cut					64
Medium	R Gain	j	a	00	C0	192
	G Gain	j	b	00	C0	192
	B Gain	j	c	00	C0	192
	R Cut					64
	G Cut					64
	B Cut					64
Warm	R Gain	j	d	00	C0	192
	G Gain	j	e	00	C0	192
	B Gain	j	f	00	C0	172
	R Cut					64
	G Cut					64
	B Cut					64

5.1.5. Adjustment method

5.1.5.1 Auto WB calibration

(1) Set TV in ADJ mode using P-ONLY key (or POWER ON key)

(2) Place optical probe on the center of the display

- It need to check probe condition of zero calibration before adjustment.

(3) Connect RS-232C Cable

(4) Select mode in ADJ Program and begin a adjustment.

(5) When WB adjustment is completed with OK message, check adjustment status of pre-set mode (Cool, Medium, Warm)

(6) Remove probe and RS-232C cable.

▪ W/B Adj. must begin as start command “wb 00 00” , and finish as end command “wb 00 ff”, and Adj. offset if need

5.1.5.2. Manual adj. method

(1) Set TV in Adj. mode using POWER ON

(2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface..

(3) Press ADJ key -> EZ adjust using adj. R/C -> 6. White-Balance then press the cursor to the right (KEY►).
(When KEY(►) is pressed 204 Gray(80IRE) internal pattern will be displayed)

(4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.

(5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature

5.1.6 Reference (White Balance Adj. coordinate and color temperature)

▪ Luminance: 204 Gray

▪ Standard color coordinate and temperature using CS-1000 (over 26 inch)

Mode	Coordinate		Temp	△uv
	X	Y		
Cool	0.269	0.273	13,000K	0.0000
Medium	0.285	0.293	9,300K	0.0000
Warm	0.313	0.329	6,500K	0.0000

▪ Standard color coordinate and temperature using CA-210(CH 14)

Mode	Coordinate		Temp	△uv
	X	Y		
Cool	0.269±0.002	0.273±0.002	13,000K	0.0000
Medium	0.285±0.002	0.293±0.002	9,300K	0.0000
Warm	0.313±0.002	0.329±0.002	6,500K	0.0000

5.2. Option selection per country

5.2.1. Overview

(1) Tool option selection is only done for models in Non-USA North America due to rating

(2) Applied model: LA25C Chassis applied to CANADA and MEXICO

5.2.2. Country Group selection

(1) Press ADJ key on the Adj. R/C, and then select Country Group Menu

(2) Depending on destination, select US, then on the lower Country option, select US, CA, MX.
Selection is done using +, - KEY

(3) Using DFT(Auto)

※ PC (for communication through RS-232C) -> UART Baud rate : 115200 bps
Command : ah 00 00 DATA(Area Number(hexadecimal)

ITEM	DATA(Area Number)	AREA
AREA OPTION1	0	USA
	1	CANADA
	2	MEXICO
	3	COMMERCIAL

5.2.3. Tool Option Inspection

▪ Press Adj. key on the Adj. R/C, then select Tool option

Model	Tool 1	Tool 2	Tool 3	Tool 4
42CS530-UB	LGD	01028	04354	45120
42CS560-UE	LGD	01028	08450	45120
42CS560-UE	AUO	09216	08450	45120
37CS560-UE	LGD	00772	08450	45120
32CS560-UE	LGD	00516	08450	45120
32CS560-UE	AUO	08704	08450	45120
32CS460-UC 32CS461-UA	LGD	00512	00258	45120
32CS460-UC 32CS461-UA	AUO	08704	00258	45120
26CS460-UA	LGD	00257	00258	45120
32LS3400-UA	LGD	545	12546	45128
42LS3400-UA	LGD	1057	12546	45128
22LS3500-UD	CMI	4113	12546	45128
26LS3500-UD	LGD	273	12546	45128
32LS3500-UD	AUO	8722	12546	45128
32LS3500-UD	LGD			

● Tool option can be reconstructed by Software

5.3. Ship-out mode check (In-stop)

- After final inspection, press In-Stop key of the Adj. R/C and check that the unit goes to Stand-by mode

6. GND and HI-POT Test

6.1. GND & HI-POT auto-check preparation

(1) Check the POWER CABLE and SIGNAL CABE insertion condition

6.2. GND & HI-POT auto-check

(1) Pallet moves in the station. (POWER CORD / AV CORD is tightly inserted)
(2) Connect the AV JACK Tester.
(3) Controller (GWS103-4) on.
(4) GND Test (Auto)
- If Test is failed, Buzzer operates.
- If Test is passed, execute next process (Hi-pot test). (Remove A/V CORD from A/V JACK BOX)

(5) HI-POT test (Auto)
- If Test is failed, Buzzer operates.
- If Test is passed, GOOD Lamp on and move to next process automatically.

6.3. Checkpoint

(1) Test voltage
- GND: 1.5KV/min at 100mA
- SIGNAL: 3KV/min at 100mA

(2) TEST time: 1 second
(3) TEST POINT
- GND Test = POWER CORD GND and SIGNAL CABLE GND.
- Hi-pot Test = POWER CORD GND and LIVE & NEUTRAL.

(4) LEAKAGE CURRENT: At 0.5mArms

7. AUDIO output check

7.1. Audio input condition

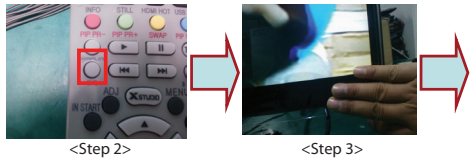
(1) RF input: Mono, 1KHz sine wave signal, 100% Modulation
(2) CVBS, Component: 1KHz sine wave signal (0.4Vrms)
(3) RGB PC: 1KHz sine wave signal (0.7Vrms)

7.2. Specification

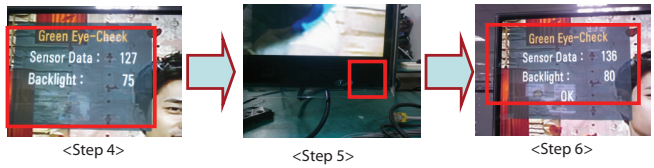
No	Item	Min	Typ	Max	Unit	Remark
1	Audio practical max Output, L/R	9.0 8.5	10.0 8.9	12.0 9.9	W Vrms	(1) Measurement condition - EQ/AVL/Clear Voice: Off (2) Speaker (8Ω Impedance)

8. EYE-Q TEST

Step 1) Turn on the TV..
Step 2) Press 'EYE button' on the adjustment remote-controller.
Step 3) Cover 'Eye Q sensor' on the front of set with your hands, hold it for 6 seconds.
Step 4) Check "the Sensor Data" on the screen, make certain that Data is below 10. If Data isn't below 10 in 6 seconds, Eye Q sensor would be bad. You should change Eye Q sensor.
Step 5) Uncover your hands from Eye Q sensor, hold it for 6 seconds.
Step 6) Check "Back Light(xxx)" on the screen, check data increase . You should change Eye Q sensor.



<Step 2> <Step 3>

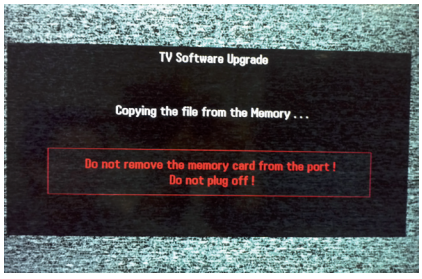


<Step 4> <Step 5> <Step 6>

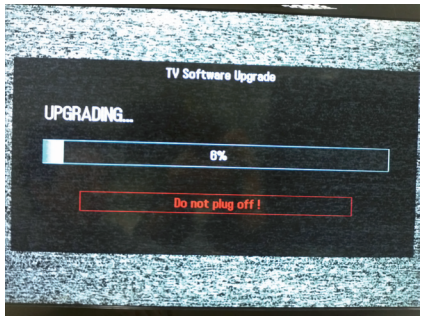
9. USB S/W Download (optional, Service only)

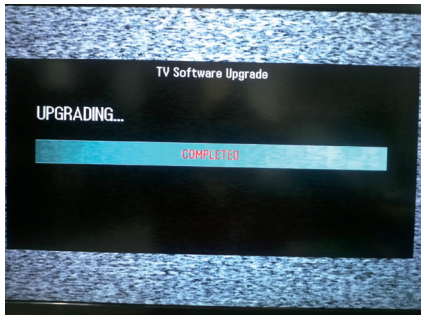
(1) Put the USB Stick to the USB socket
(2) Automatically detecting update file in USB Stick
- If your downloaded program version in USB Stick is lower than that of TV set, it didn't work. Otherwise USB data is automatically detected.

(3) Show the message "Copying files from memory"



(4) Updating is staring.





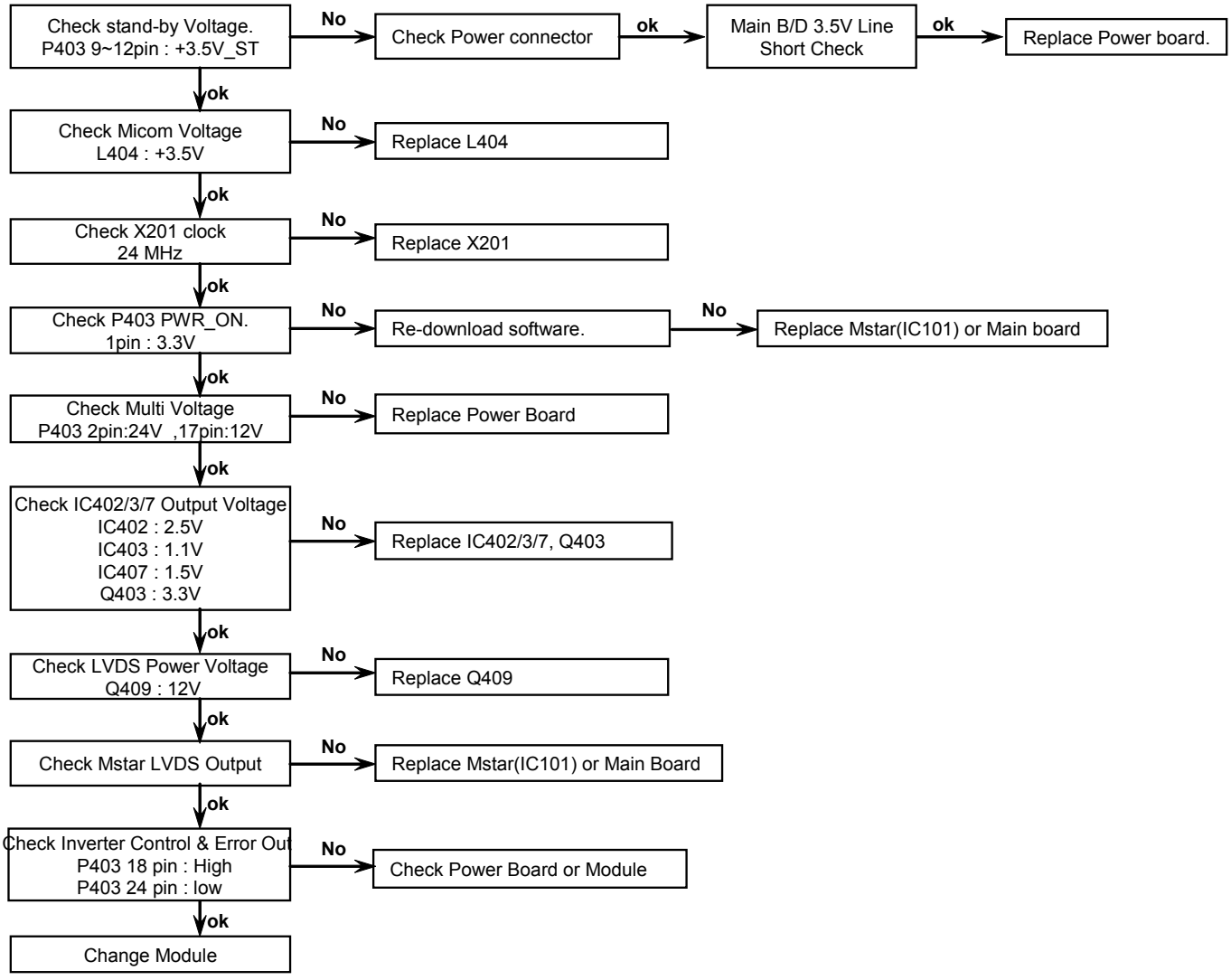
(5) Updating Completed, The TV will restart automatically
(6) If your TV is turned on, check your updated version and Tool option.

* If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. If all channel data is cleared, you didn't have a DTV/ ATV test on production line.

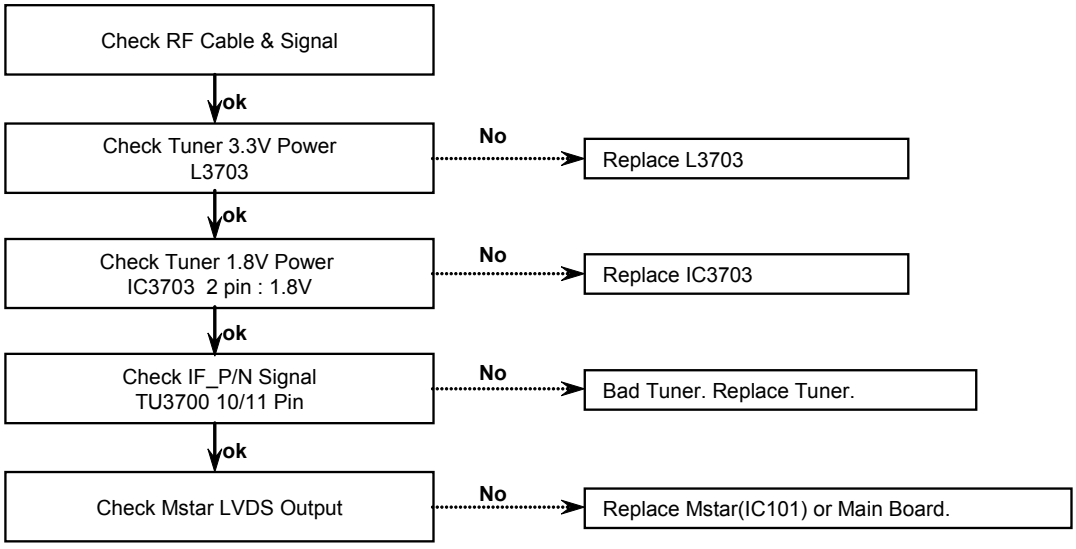
* After downloading, TOOL OPTION setting is needed again.
(1) Push "IN-START" key in service remote controller.
(2) Select "Tool Option 1" and Push "OK" button.
(3) Punch in the number. (Each model has their number.)

TROUBLESHOOTING

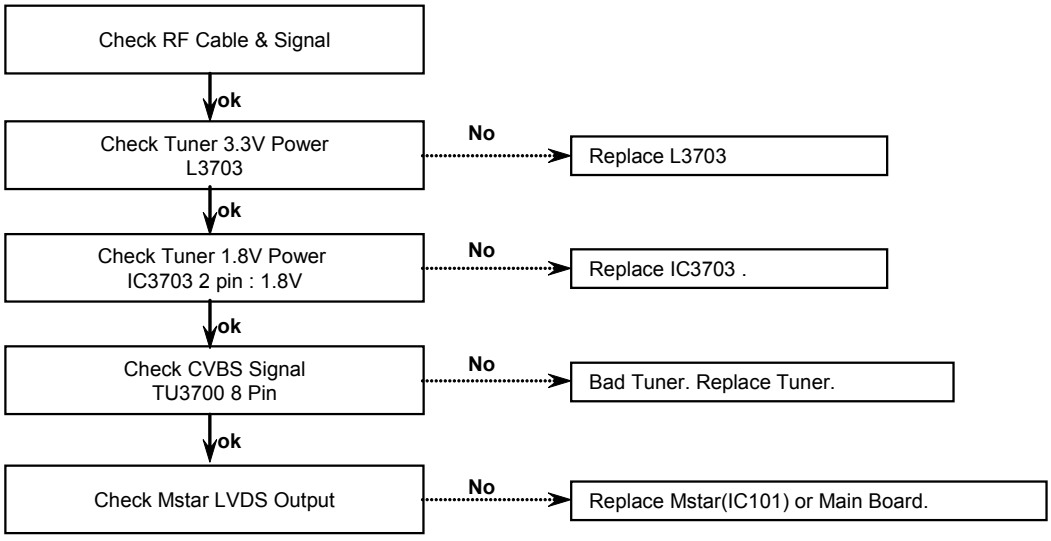
1. Power-up boot check



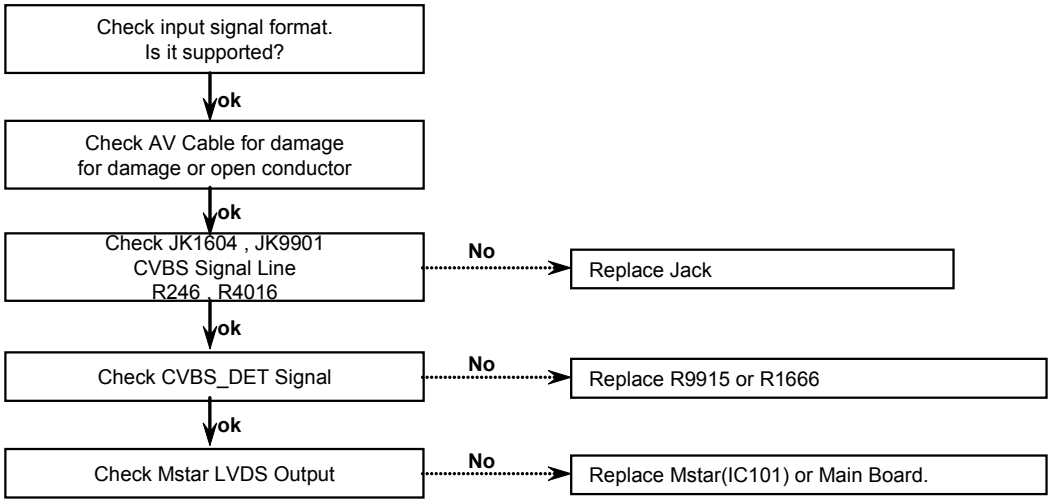
2. Digital TV Video



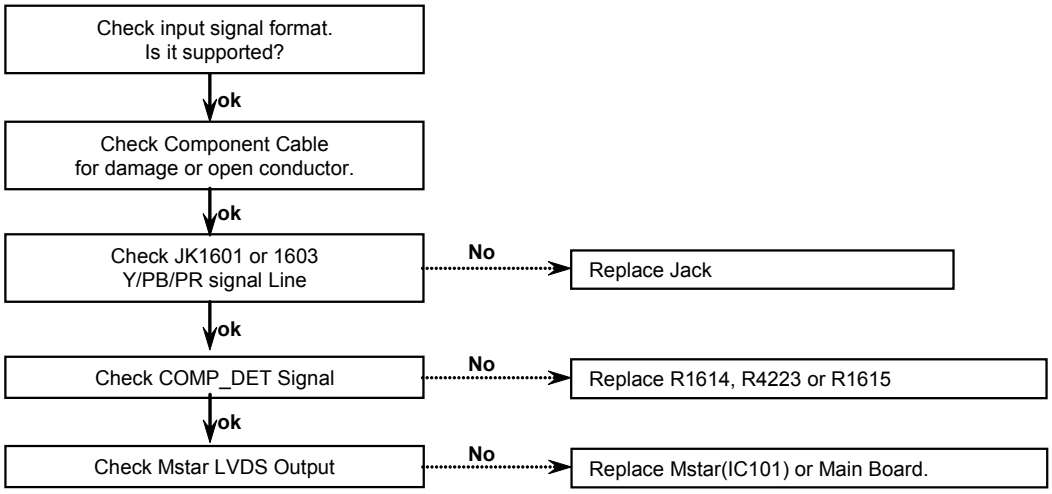
3. Analog TV Video



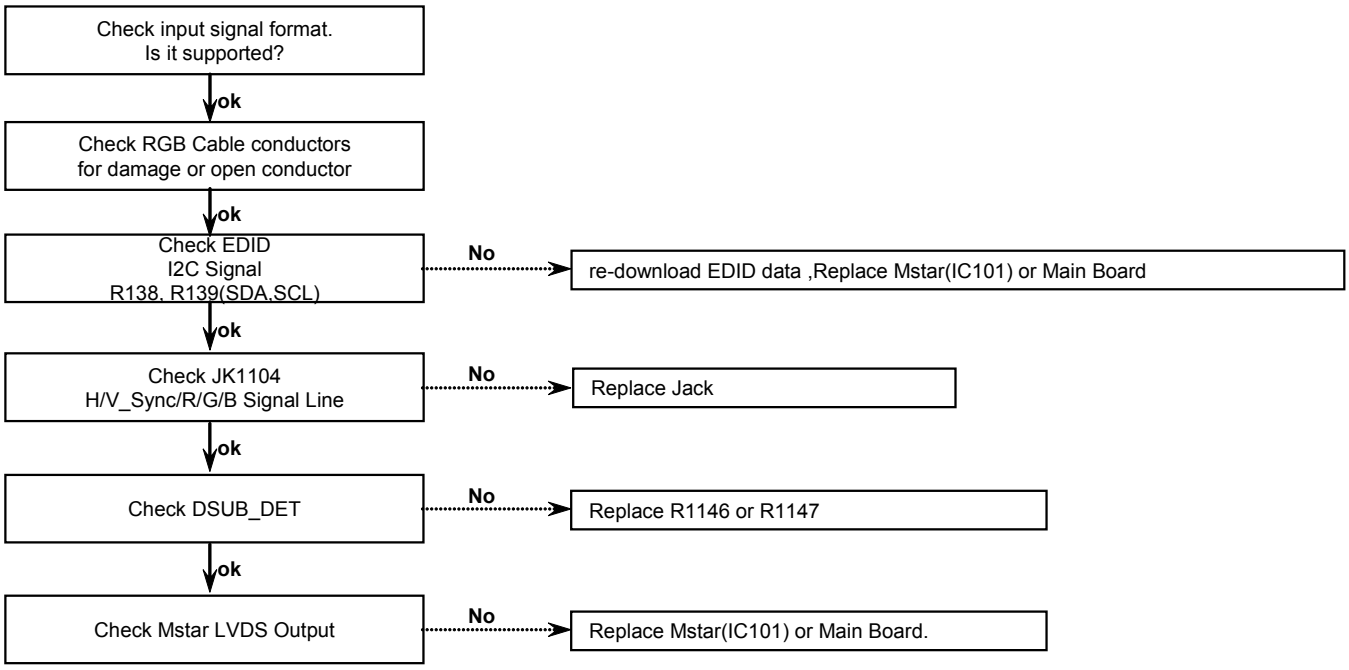
4. AV Video



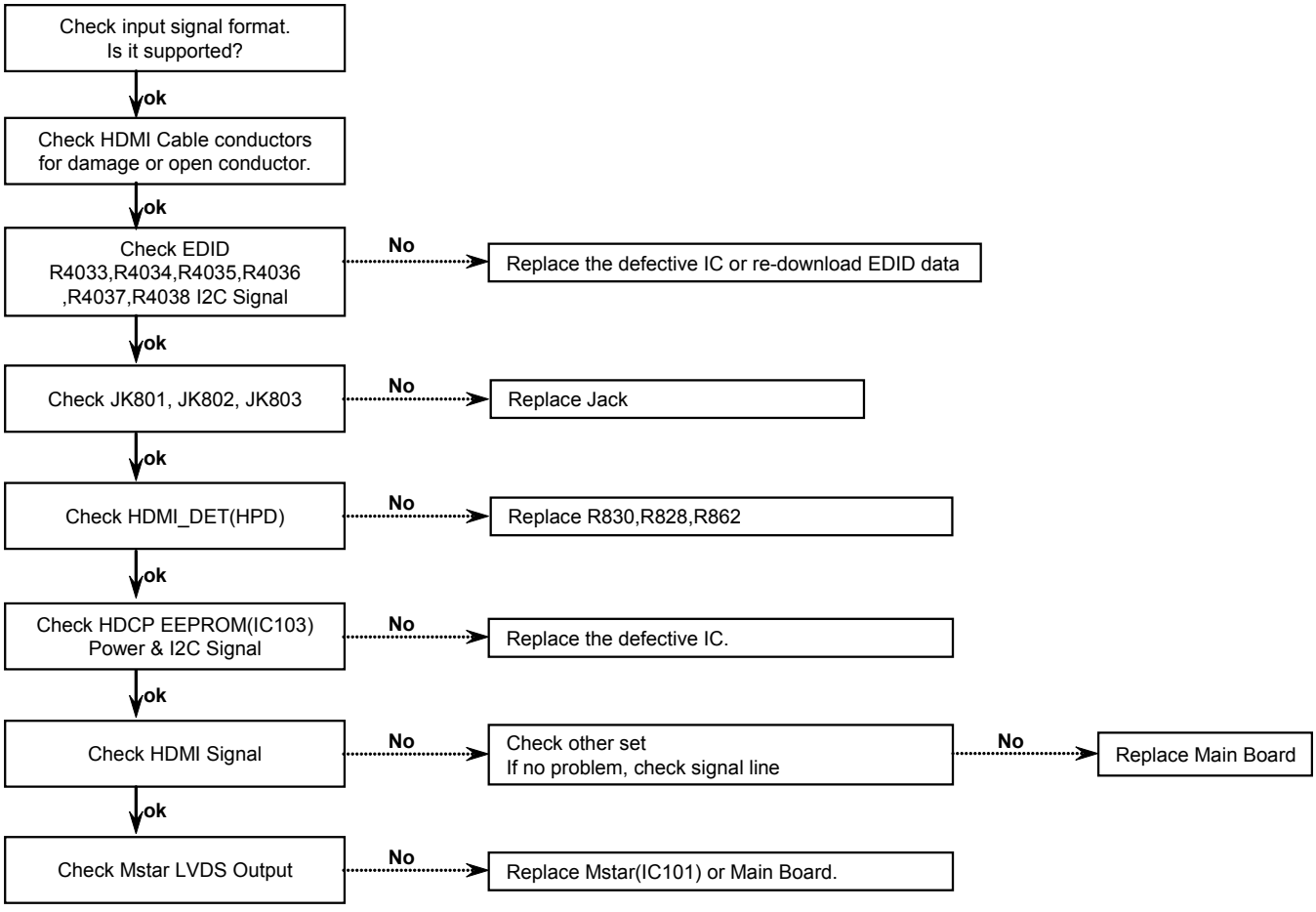
5. Component Video



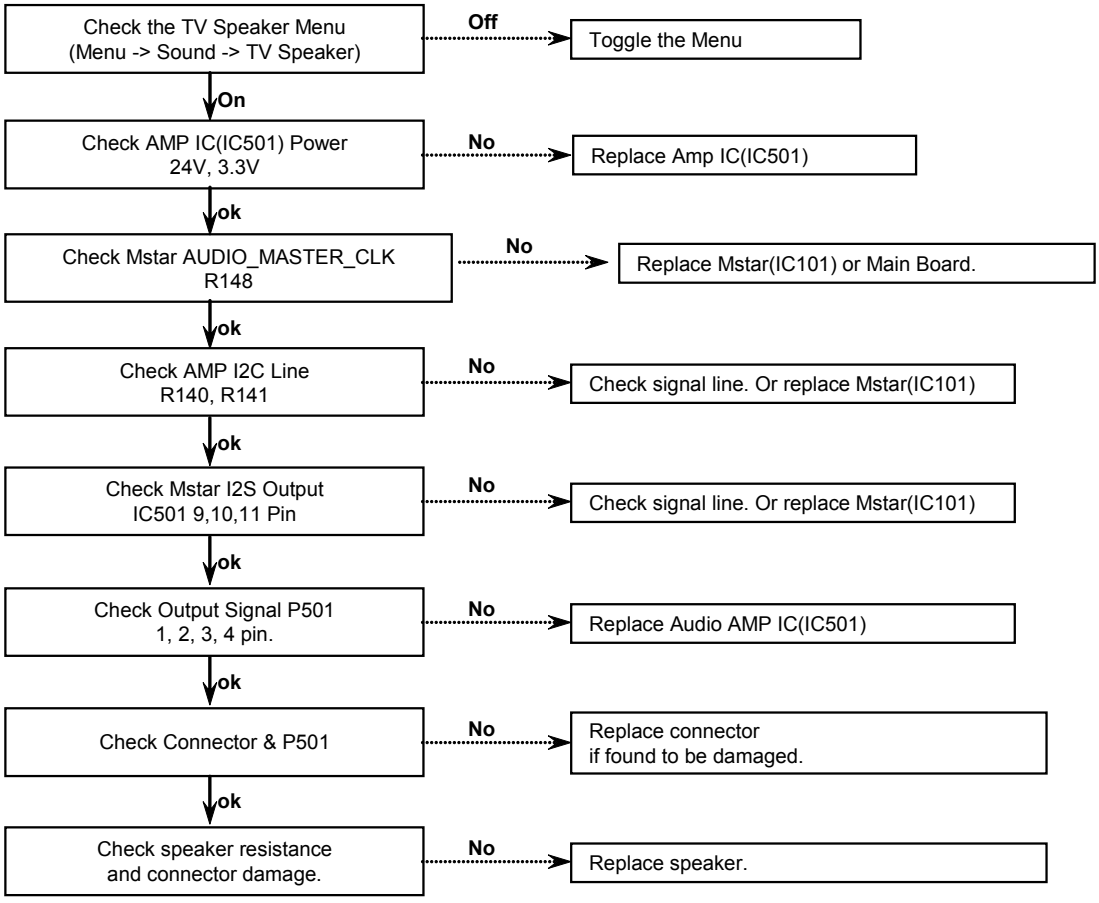
6. RGB Video



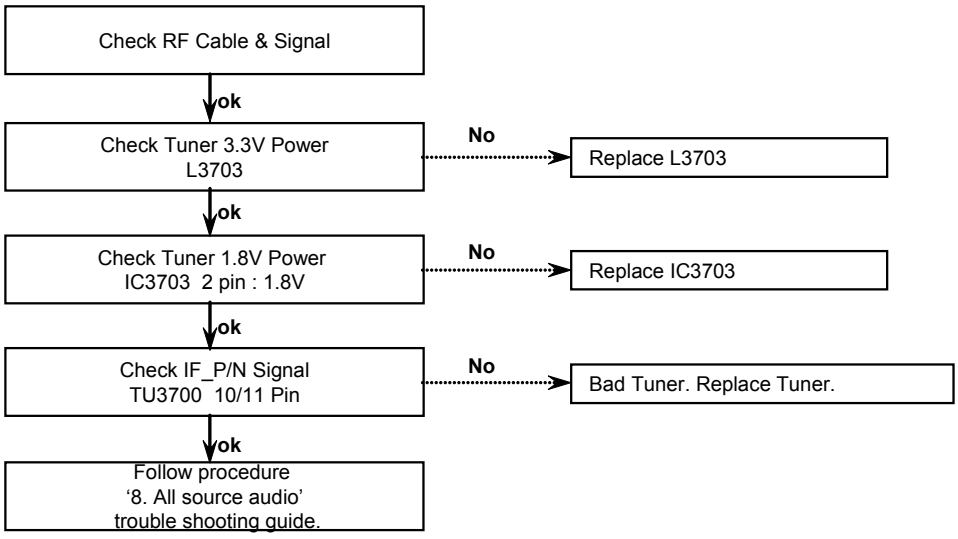
7. HDMI Video



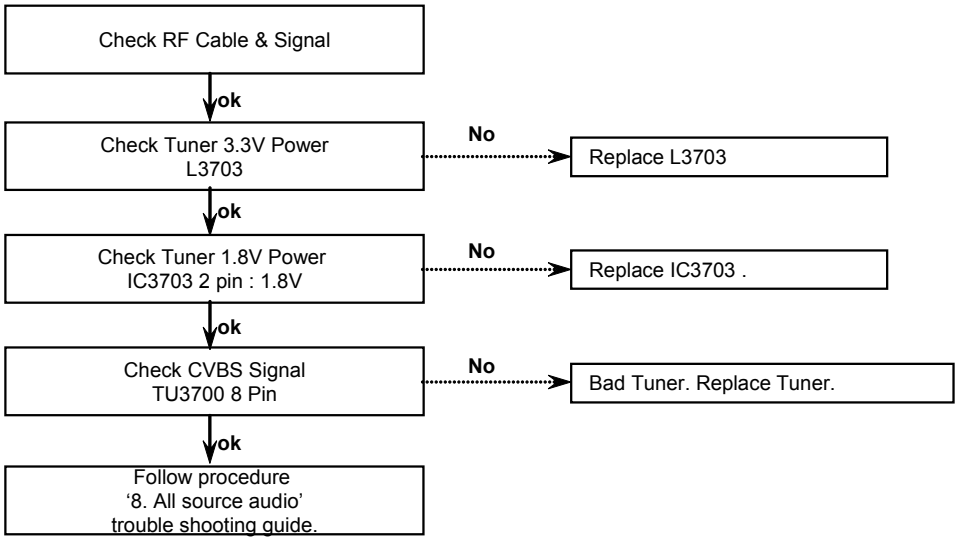
8. All Source Audio



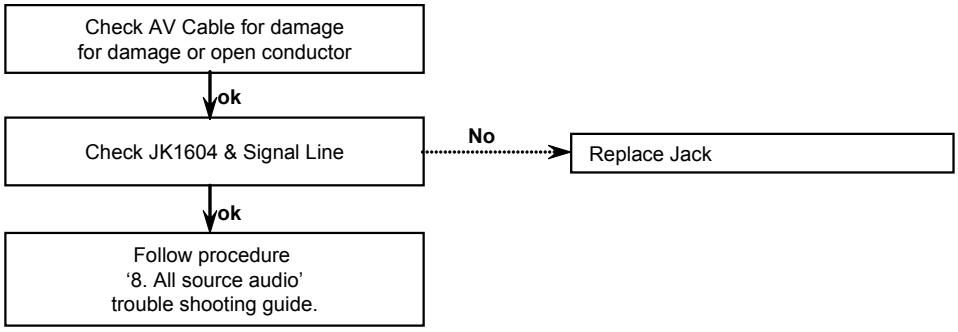
9. Digital TV Audio



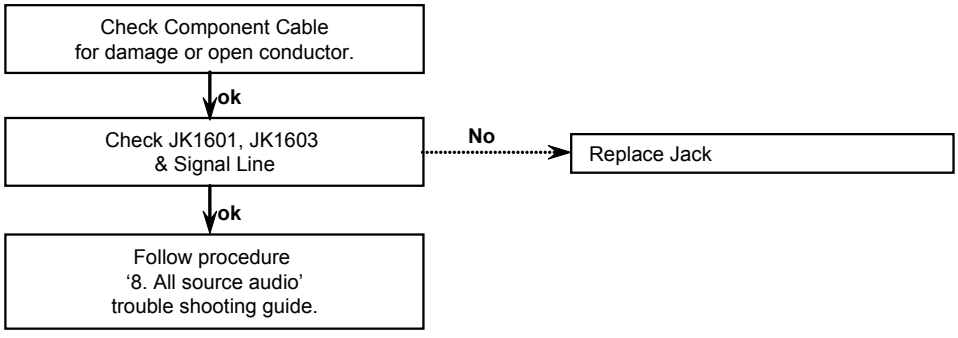
10. Analog TV Audio



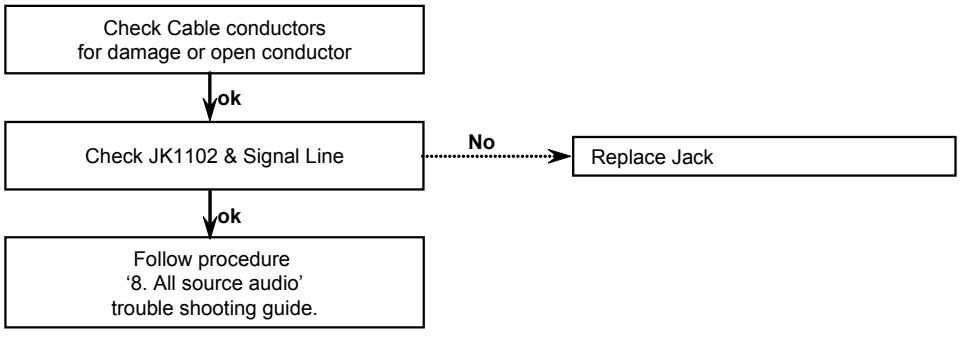
11. AV Audio



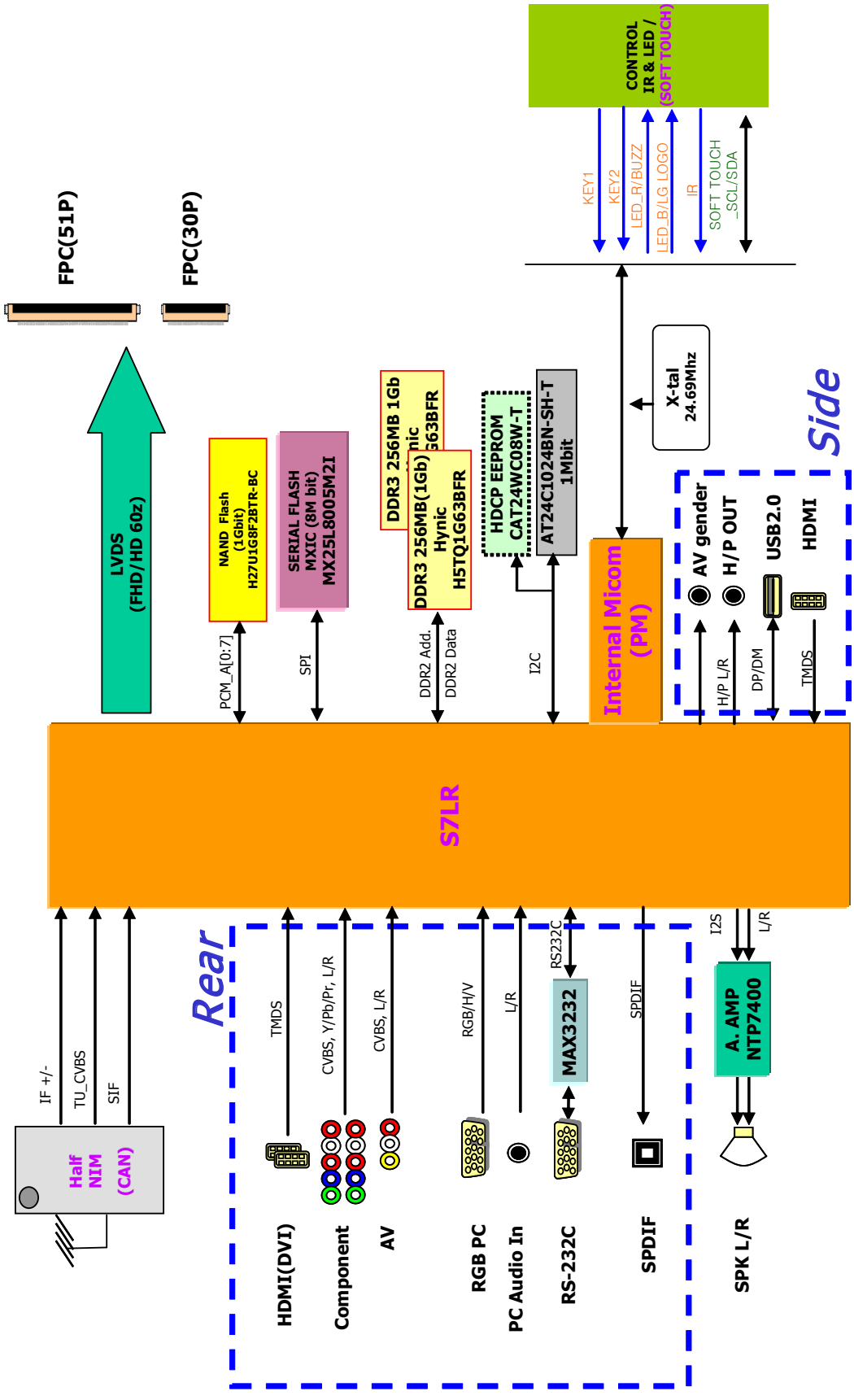
12. Component Audio



13. RGB Audio



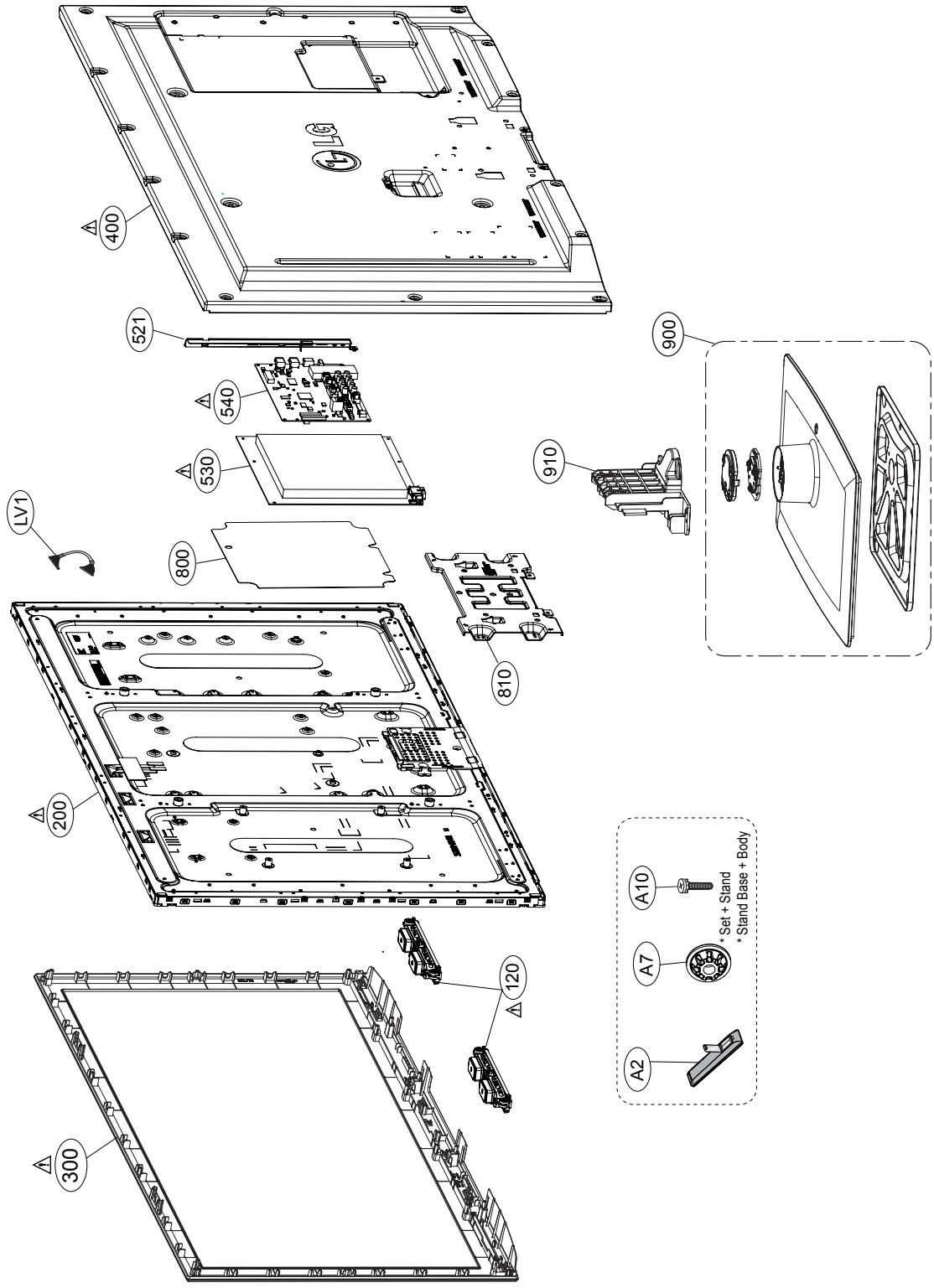
BLOCK DIAGRAM



EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



NAND FLASH MEMORY

IC102
NAND016W3B2CN6E
NAND_FLASH_1G_NUMONYX
EAN60762401

+3.3V_Normal

OS R107 1K
OS R108 3.9K
OPT R108 1K
OS C101 0.1uF
OPT R105 1K
OPT R104 10K
OS R106 1K
OS R102 3.3K
Q101 MMBT3904(NXP)

/F_RB
/PF_OE
/PF_CE0
/PF_CE1
PF_ALE
/PF_WE
/PF_WP

OS C102 10uF
OS C103 0.1uF
OS AR101 22
OS AR102 22

PCM_A[0-7]
PCM_A[7]
PCM_A[6]
PCM_A[5]
PCM_A[4]
PCM_A[3]
PCM_A[2]
PCM_A[1]
PCM_A[0]

<CHIP Config(LED_R/BUZZ)>

Boot from SPI CS1N(EXT_FLASH) 1'b0
Boot from SPI_CS0N(INT_FLASH) 1'b1

<CHIP Config>
(I2S_OUT_BCK,I2S_OUT_MCK,PAD_PWM1PAD_PWM0)

B51_no_EJ	: 4'b0000	Boot from 8051 with SPI flash
SB51_WOS	: 4'b0001	Secure B51 without scramble
SB51_WS	: 4'b0010	Secure B51 with scramble
MIPS_SPI_NO_EJ	: 4'b0100	Boot from MIPS with SPI flash
MIPS_SPI_EJ_1	: 4'b0101	Boot from MIPS with SPI flash
MIPS_SPI_EJ_2	: 4'b0110	Boot from MIPS with SPI flash
MIPS_WOS	: 4'b1001	Secure MIPS without scramble
MIPS_WS	: 4'b1010	Scerur MIPS with SCRAMBLE

+3.3V_Normal
R115 1K OPT
R117 1K OPT
R165 1K OS
R123 1K OPT
R152 1K OPT
LED_R/BUZZ
AUD_SCK
AUD_MASTER_CLK_0
PWM1
PWM0
AUD_MASTER_CLK
R148 56
OPT C112 100pF 50V
R116 1K
R119 1K
R121 1K NON_OS
R124 1K
R153 1K

IC101 LGE2111A-T8

S7LR2_DIVX_MS10

PCM_D[0-7]
PCM_A[0-14]
/PCM_REG
/PCM_OE
/PCM_WE
/PCM_IORD
/PCM_IOWR
/PCM_CE
/PCM_IRQA
/PCM_CD
/PCM_WAIT
PCM_RST
+5V_Normal
R132 10K
R133 10K
C108 0.1uF OPT
C109 0.1uF

/CI_CD1
/CI_CD2
OPT R120 22
OPT R122 22
to delete CI or gate for

PCM_5V_CTL
ERROR_OUT
USB1_OCD
USB1_CTL
USB2_OCD
USB2_CTL
PM_TXD
PM_RXD
MODEL_OPT_6
MODEL_OPT_7
I2C_SCL
I2C_SDA
R136 22
R137 22
RGB_DDC_SDA
RGB_DDC_SCL
for SYSTEM EEPROM (IC104)

PWM0
PWM1
PWM2
LED_B/LG_LOGO
LED_R/BUZZ
KEY1
KEY2
R101 22
R163 1K
R164 1K
EU_OPT
SCART1_MUTE
+3.5V_ST
R149 4.7K 1I_SUB
R143 4.7K 1I_SUB
S/T_SDA
S/T_SCL

LOCAL DIMMING
L/DIM_VS
L/DIM_SCLK
L/DIM_MOSI
SENSOR_SCL
SENSOR_SDA

PCMD[0]/GPIO126
PCMDATA[1]/GPIO127
PCMDATA[2]/GPIO128
PCMDATA[3]/GPIO120
PCMDATA[4]/GPIO119
PCMDATA[5]/GPIO118
PCMDATA[6]/GPIO117
PCMDATA[7]/GPIO116
PCMAD[0]/GPIO125
PCMAD[1]/GPIO124
PCMAD[2]/GPIO122
PCMAD[3]/GPIO121
PCMAD[4]/GPI099
PCMAD[5]/GPIO101
PCMAD[6]/GPIO102
PCMAD[7]/GPIO103
PCMAD[8]/GPIO108
PCMAD[9]/GPIO110
PCMAD[10]/GPIO114
PCMAD[11]/GPIO112
PCMAD[12]/GPIO104
PCMAD[13]/GPIO107
PCMAD[14]/GPIO106
PCMREG_N/GPIO123
PCMOE_N/GPIO113
PCMWE_N/GPIO197
PCMIORD_N/GPIO111
PCMIOWR_N/GPIO109
PCMCE_N/GPIO115
PCMIRQA_N/GPIO105
PCMCD_N/GPIO130
PCMWAIT_N/GPIO100
PCM_RESET/GPIO129
PCM2_CE_N/GPIO131
PCM2_IRQA_N/GPIO132
PCM2_CD_N/GPIO135
PCM2_WAIT_N/GPIO133
PCM2_RESET/GPIO134
UART1_TX/GPIO43
UART1_RX/GPIO44
UART2_TX/GPIO65
UART2_RX/GPIO64
UART3_TX/GPIO47
UART3_RX/GPIO48
I2C_SCKM2/DDCR_CK/GPIO72
I2C_SDAM2/DDCR_DA/GPIO71
DDCA_DA/UART0_TX
DDCA_CK/UART0_RX
PWM0/GPIO66
PWM1/GPIO67
PWM2/GPIO68
PWM3/GPIO69
PWM4/GPIO70
PWM_PM/GPIO199
SAR0/GPIO31
SAR1/GPIO32
SAR2/GPIO33
SAR3/GPIO34
SAR4/GPIO35
VSYNC_LIKE/GPIO145
SPI1_CK/GPIO201
SPI1_DI/GPIO202
SPI2_CK/GPIO203
SPI2_DI/GPIO204

NF_CE1Z/GPIO138
NF_WPZ/GPIO198
NF_CEZ/GPIO137
NF_CLE/GPIO136
NF_REZ/GPIO139
NF_WEZ/GPIO140
NF_ALE/GPIO141
NF_RBZ/GPIO142
GPIO_PM[0]/GPIO6
PM_UART_TX/GPIO_PM[1]/GPIO7
GPIO_PM[2]/GPIO8
GPIO_PM[3]/GPIO9
GPIO_PM[4]/GPIO10
PM_UART_RX/GPIO_PM[5]/GPIO11
PM_SPI_SCZ1/GPIO_PM[6]/GPIO12
GPIO_PM[7]/GPIO13
GPIO_PM[8]/GPIO14
GPIO_PM[9]/GPIO15
PM_SPI_SCZ2/GPIO_PM[10]/GPIO16
GPIO_PM[11]/GPIO17
PM_SPI_SCK/GPIO1
PM_SPI_CZ0/GPIO_PM[12]/GPIO0
PM_SPI_SDI/GPIO2
PM_SPI_SDO/GPIO3
TS0CLK/GPIO87
TS0VALID/GPIO85
TS0SYNC/GPIO86
TS0DATA_[0]/GPIO77
TS0DATA_[1]/GPIO78
TS0DATA_[2]/GPIO79
TS0DATA_[3]/GPIO80
TS0DATA_[4]/GPIO81
TS0DATA_[5]/GPIO82
TS0DATA_[6]/GPIO83
TS0DATA_[7]/GPIO84
TS1CLK/GPIO198
TS1VALID/GPIO196
TS1SYNC/GPIO197
TS1DATA_[0]/GPIO88
TS1DATA_[1]/GPIO89
TS1DATA_[2]/GPIO90
TS1DATA_[3]/GPIO91
TS1DATA_[4]/GPIO92
TS1DATA_[5]/GPIO93
TS1DATA_[6]/GPIO94
TS1DATA_[7]/GPIO95

OS AR103 22
AR104 22 OS
/PF_WP
/PF_CE0
/PF_CE1
/PF_OE
/PF_WE
/PF_ALE
/F_RB

H5 POWER_DET
K6 PM_TXD
K5 INV_CTL
J6 RL_ON
K4 POWER_ON/OFF_1
L6 PM_RXD
C2
L5 /FLASH_WP
M6 SIDE_HP_MUTE
M5 PANEL_CTL
C1 PM_MODEL_OPT_0
M4 AMP_MUTE

A2 R147 33
D3 R154 22 R146 33
B2 OPT
B1 R151 33
SPI_SCK
/SPI_CS
SPI_SDI
SPI_SDO
for SERIAL FLASH

CI_TS_CLK
CI_TS_VAL
CI_TS_SYNC
CI_TS_DATA[0-7]
from CI SLOT

Y14 CI_TS_CLK
AA10 CI_TS_VAL
Y12 CI_TS_SYNC
Y13 CI_TS_DATA[0]
Y11 CI_TS_DATA[1]
AA12 CI_TS_DATA[2]
AB12 CI_TS_DATA[3]
AA14 CI_TS_DATA[4]
AB14 CI_TS_DATA[5]
AA13 CI_TS_DATA[6]
AB11 CI_TS_DATA[7]

FE_TS_CLK
FE_TS_VAL_ERR
FE_TS_SYNC
FE_TS_DATA[0-7]
Internal demod out

AC15 FE_TS_CLK
AD15 FE_TS_VAL_ERR
AC16 FE_TS_SYNC
AD16 FE_TS_DATA[0]
AE15 FE_TS_DATA[1]
AE14 FE_TS_DATA[2]
AC13 FE_TS_DATA[3]
AC14 FE_TS_DATA[4]
AD12 FE_TS_DATA[5]
AD13 FE_TS_DATA[6]
AD14 FE_TS_DATA[7]

NAND_FLASH_1G_HYNIX

EAN35669102
IC102-*1
H27U1G8F2BTR-BC

NAND_FLASH_1G_SS

EAN61857001
IC102-*2
K9F1G08U0D-SCB0

NAND_FLASH_1G_TOSHIBA

EAN61508001
IC102-*3
TC58NVG0S3ETA00BBBH

S7LR2_DIVX_CN IC101-*4 LGE2111A-VD

S7LR2_DIVX_AT_ASE IC101-*1 LGE2111A-TE

S7LR2_DIVX_AT IC101-*3 LGE2111A-W1

S7LR2_DIVX_AT_SPIL IC101-*2 LGE2111A-TE_SPIL

DIMMING

A_DIM
R156 10K
R157 100
A_DIM C111 2.2uF
PWM0
PWM2

I2C

+3.3V_Normal
R140 1K
R141 1K
R160 1K
R161 1K
R144 2.2K
R145 2.2K
AMP_SDA
AMP_SCL
I2C_SDA
I2C_SCL
SENSOR_SDA
SENSOR_SCL

HDCP EEPROM

Addr:10101--
HDCP_EEPROM IC103 CAT24WC08W-T
R113 4.7K
C107 0.1uF
R127 4.7K HDCP_EEPROM
R128 22 HDCP_EEPROM
R129 22 HDCP_EEPROM
I2C_SCL
I2C_SDA

EEPROM

IC104 AT24C256C-SSHL-T NVRAM_ATMEL
A0'h
C105 0.1uF
C104 8pF OPT
C106 8pF OPT
R111 22 I2C_SCL
R112 22 I2C_SDA
EAN61133501

NON_OS_512k_ST IC104-*3 M24512-RMN6TP

EAN43349003

NON_OS_512k_ATMEL IC104-*4 AT24C512C-SSHD-T

EAN43349004

NVRAM_ST IC104-*1 M24256-BRMN6TP

EAN61548301

NVRAM_RENESAS IC104-*2 R1EX24256BSAS0A

EAN62389501

PM MODEL OPTION

+3.5V_ST
R174 10K TOUCH_KEY
R177 10K 1I_SUB
R178 100 OPT
R179 100 OPT
R175 10K TACT_KEY
R176 10K 1I_SUB
PM_MODEL_OPT_0
PM_MODEL_OPT_1

IC101 LGE2111A-T8

S7LR2_DIVX_MS10

+3.3V_Normal
R4.7K 4.7K URSA5_RESET
URSA5_RESET
R171 100 URSA5_RESET
R172 0
R173 0 OPT
MODEL_OPT_1
AMP_SCL
AMP_SDA
MODEL_OPT_2
DEMOD_RESET

AMP_RESET
5V_DET_HDMI_1
5V_DET_HDMI_2
5V_DET_HDMI_4
AV_CVBS_DET
DSUB_DET
SC1/COMP1_DET
HP_DET
DLP
TUNER_RESET
MODEL_OPT_0
I2C_SCKM0/GPIO53
I2C_SDAM0/GPIO54
GPIO73
GPIO74

Supplied on only SMALL PCB

RXA0+ RXA0- RXA1+ RXA1- RXA2+ RXA2- RXA3+ RXA3- RXA4+ RXA4-
RXB0+ RXB0- RXB1+ RXB1- RXB2+ RXB2- RXB3+ RXB3- RXB4+ RXB4-
RXACK+ RXACK- RXBCK+ RXBCK-
MODEL_OPT_3 MODEL_OPT_4 MODEL_OPT_5 S2_RESET

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

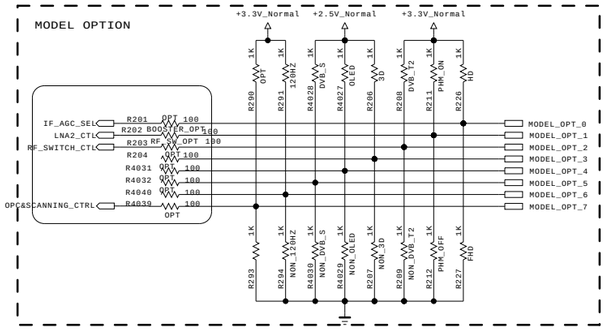
SECRET
LGElectronics

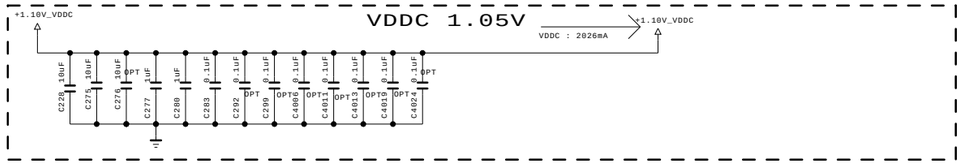
LG ELECTRONICS

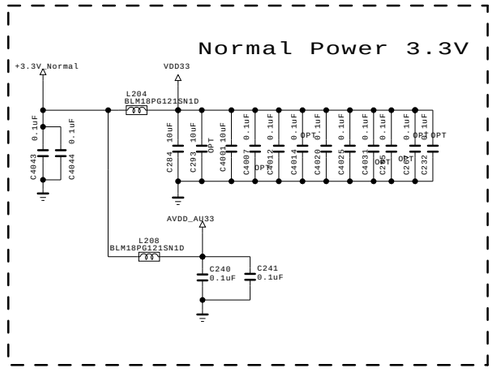
MODEL	GP4L_S7LR2	DATE	2011.11.16
BLOCK	FLASH/EEPROM/GPIO	SHEET	1 /

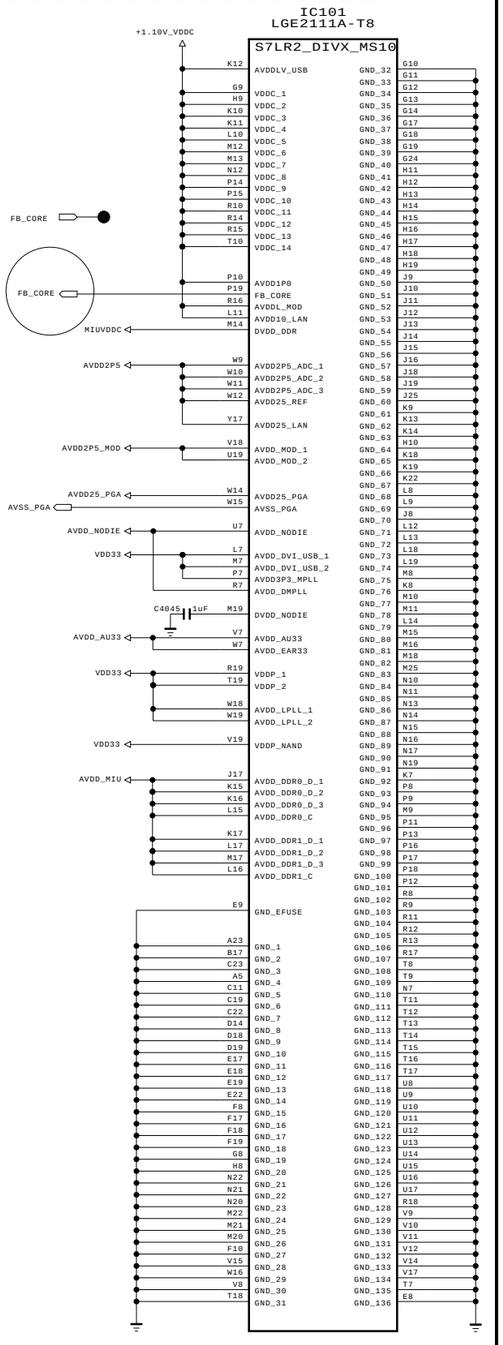
MODEL OPTION

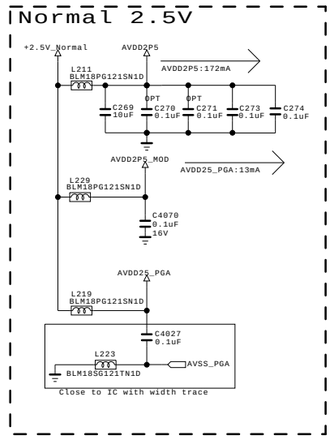
PIN NAME	PIN NO.	LOW	HIGH
MODEL_OPT_0	AB3	FHD	HD
MODEL_OPT_1	F4	PHM_OFF	PHM_ON
MODEL_OPT_2	AB2	NON_DVB_T2	DVB_T2
MODEL_OPT_3	T25	NON_3D	3D
MODEL_OPT_4	U23	NON_OLED	OLED
MODEL_OPT_5	T24	NON_DVB_S	DVB_S
MODEL_OPT_6	B8	NON_120HZ	120HZ
MODEL_OPT_7	A8	READY	READY

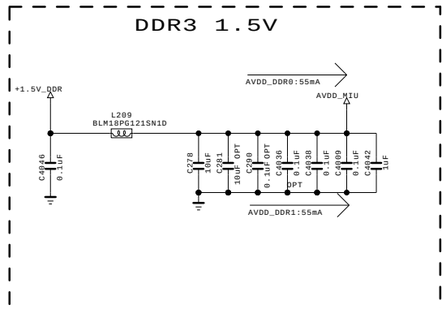


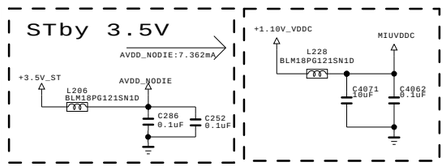


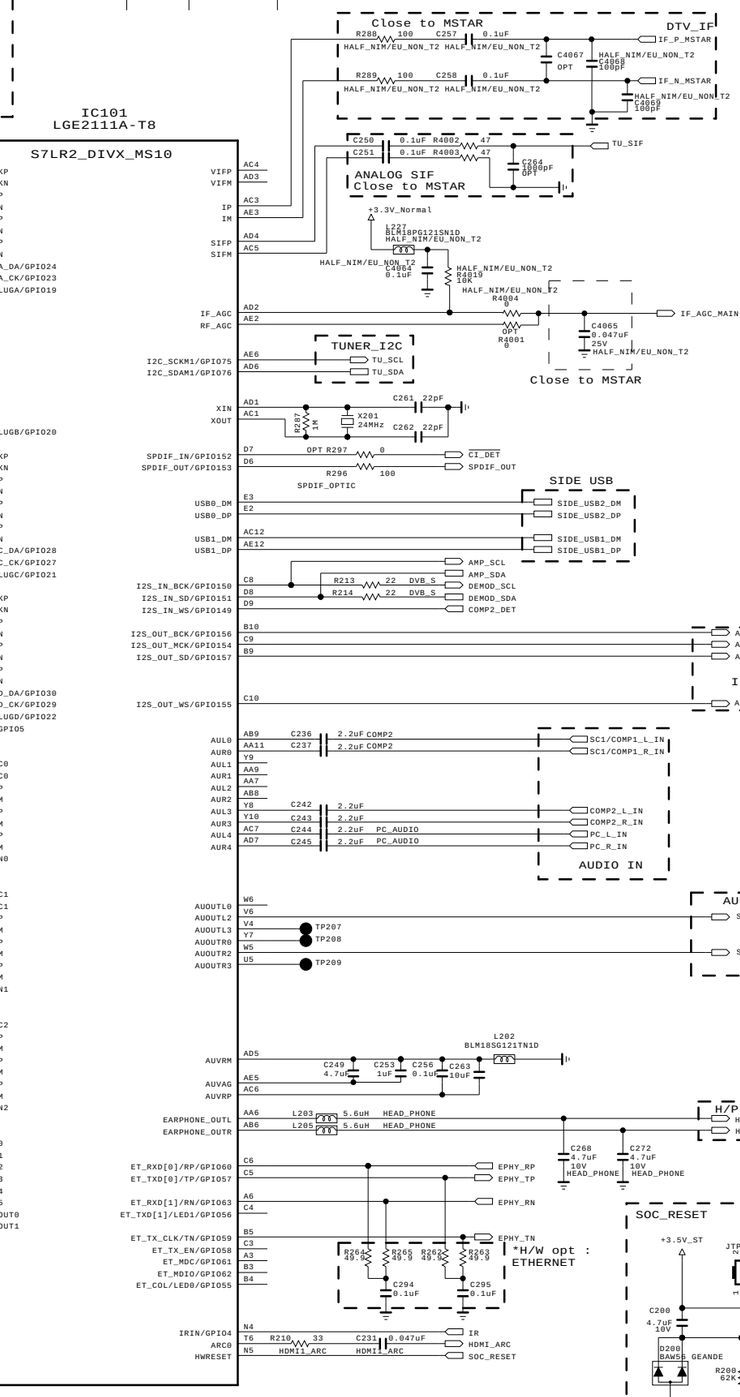


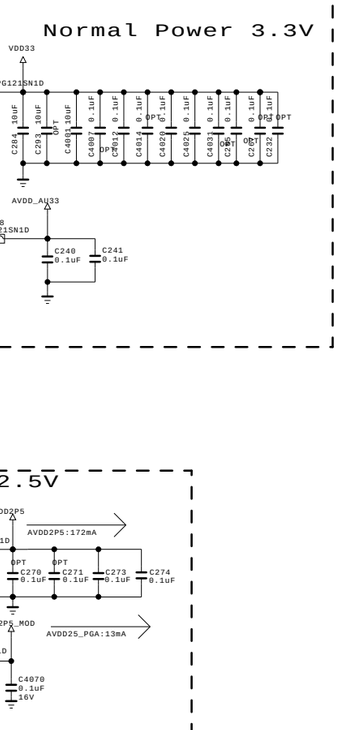












THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

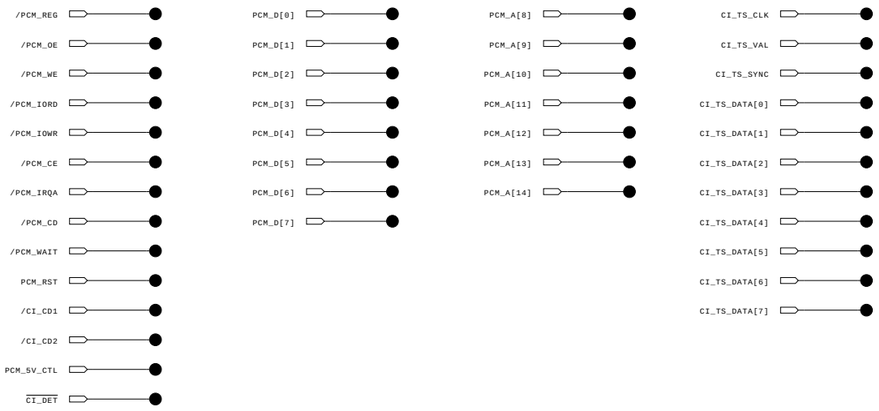
SECRET
LGElectronics

LG ELECTRONICS

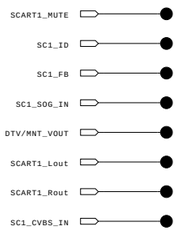
MODEL	GP4L_S7LR2	DATE	2011.07.12
BLOCK	POWER, IN/OUT, H/W OPT	SHEET	2 /

TP for NON-EU models(except EU and China)

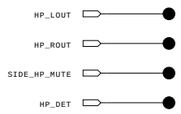
TP for CI slot



TP for SCART



TP for Headphone



TP for S2

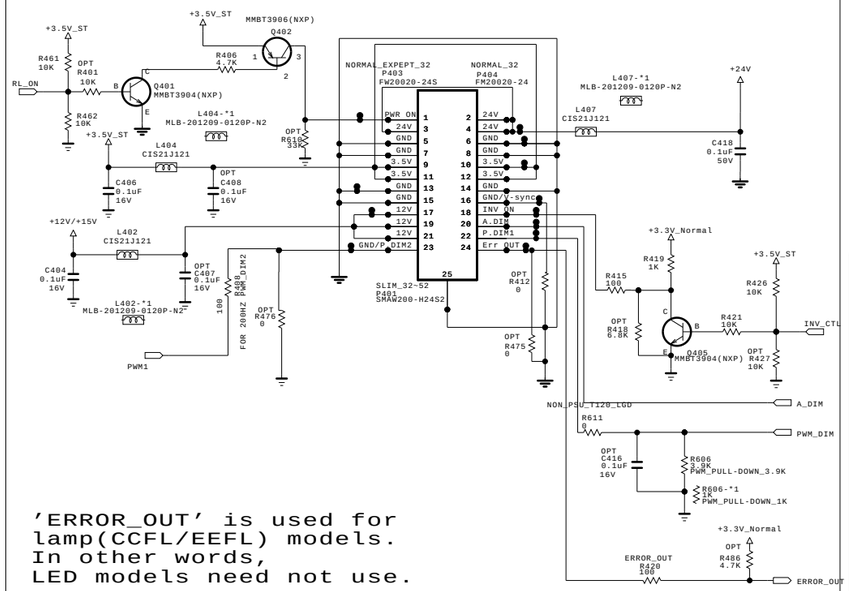
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

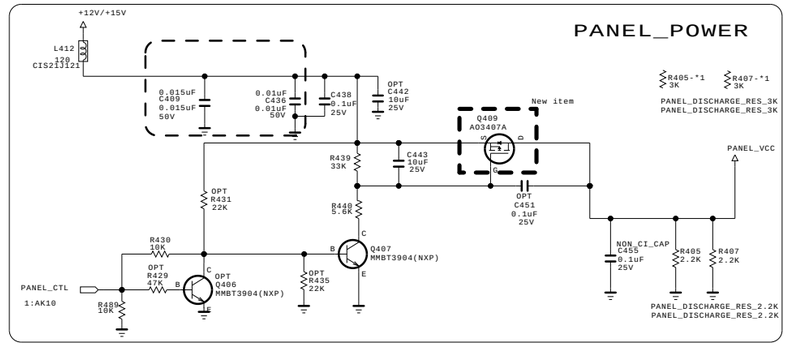
MODEL	GP4_S7LR2	DATE	2011.07.07
BLOCK	TP_NON_EN	SHEET	3 /

FROM LIPS & POWER B/D

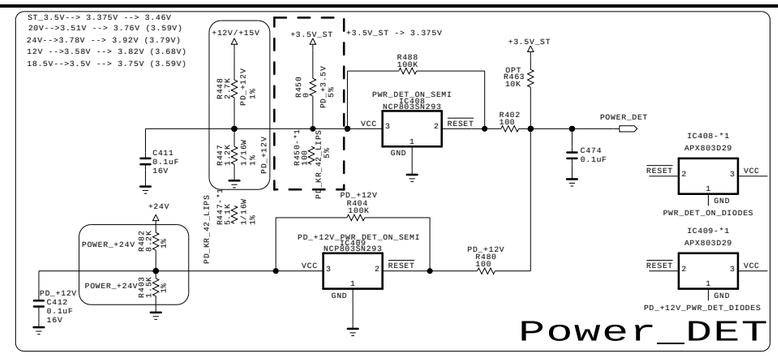


'ERROR_OUT' is used for
lamp(CCFL/EEFL) models.
In other words,
LED models need not use.

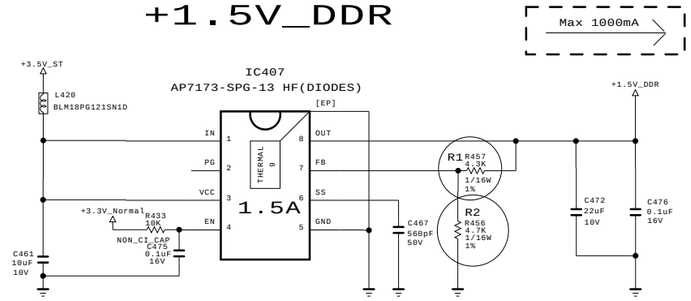
PANEL_POWER



Power_DET

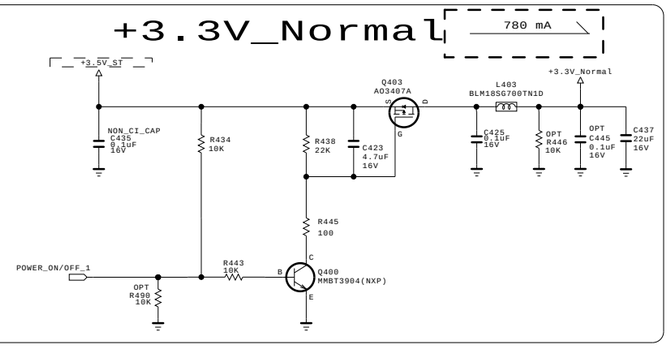


+1.5V_DDR

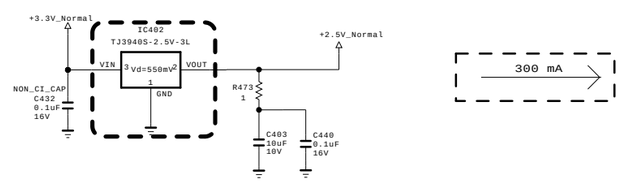


Vout=0.8*(1+R1/R2)=1.5319

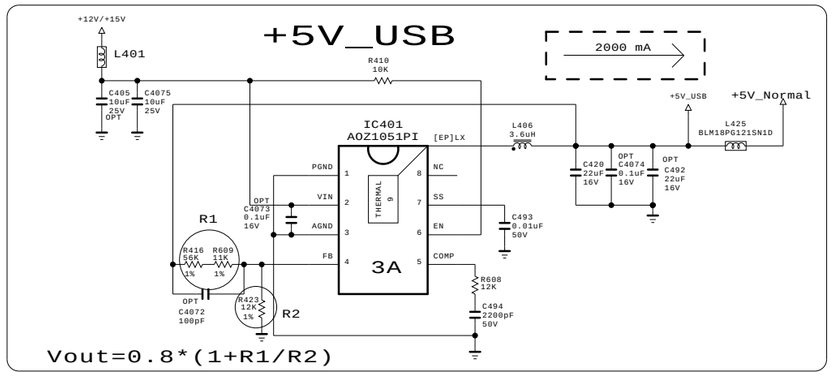
+3.3V_Normal



+2.5V/+1.8V

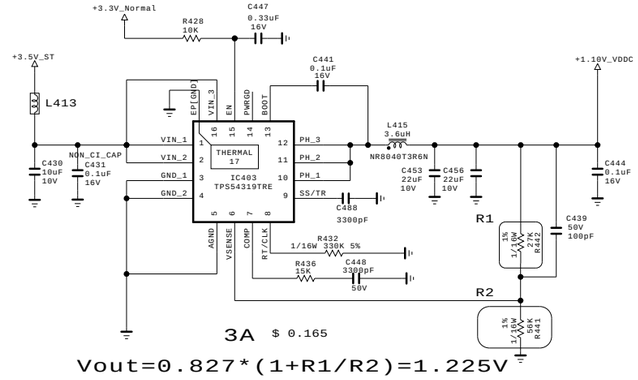


+5V_USB



Vout=0.8*(1+R1/R2)

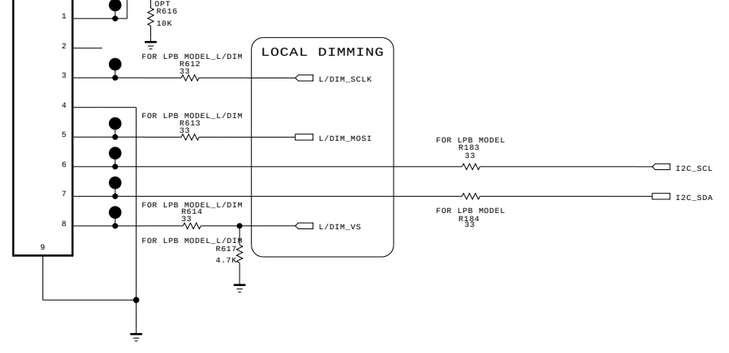
S7LR core 1.2V volt

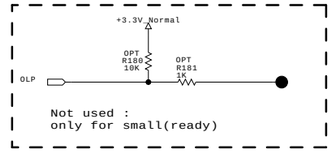


Vout=0.827*(1+R1/R2)=1.225V

FOR LPB Download

[To LED DRIVER]





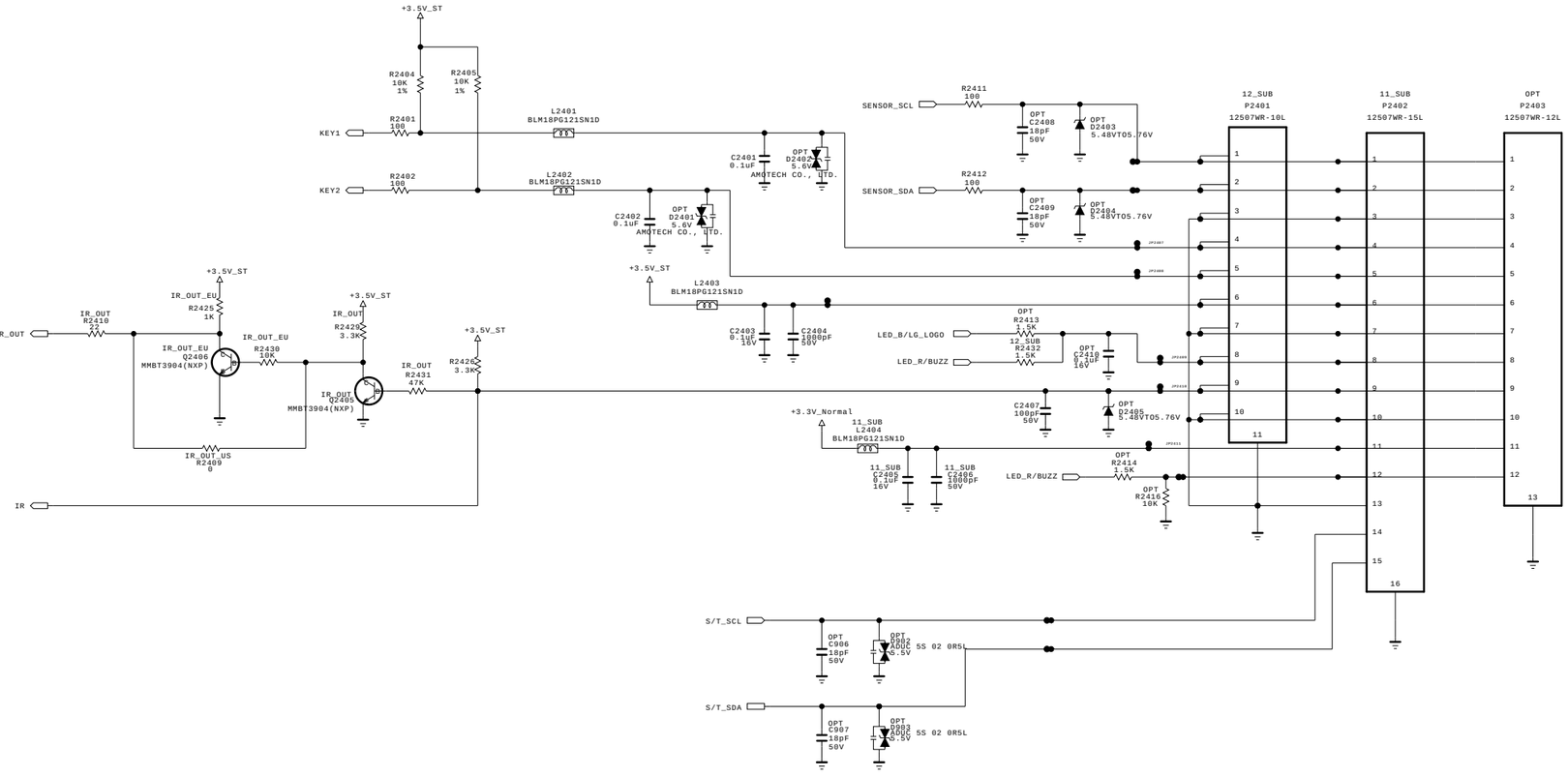
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/11.14
BLOCK	POWER_LARGE	SHEET	4

IR/LED and control for normal models.



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

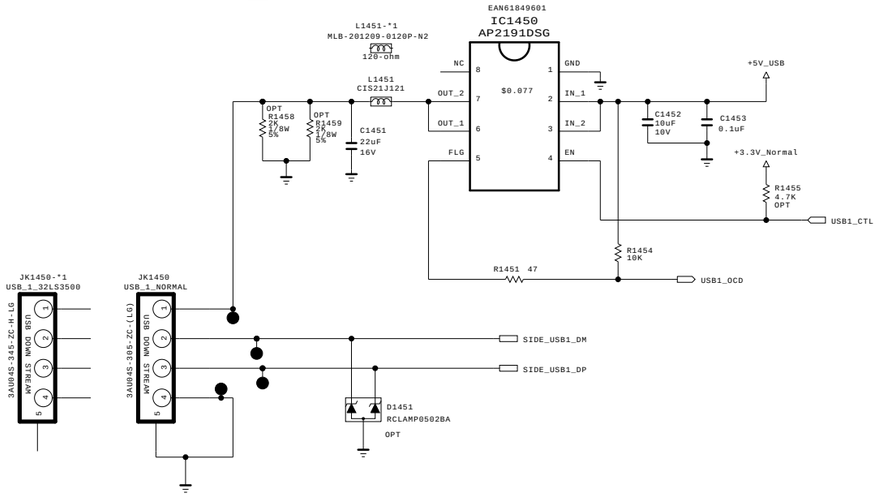
LGElectronics

LG ELECTRONICS

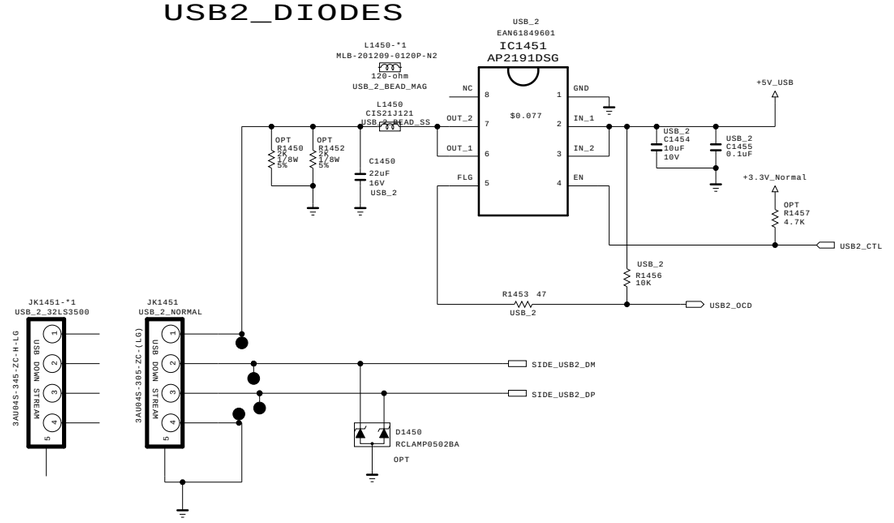
MODEL	GP4L_S7LR2	DATE	2011/11/16
BLOCK	IR/CONTROL	SHEET	6

USB (SIDE)

USB1_DIODES



USB2_DIODES



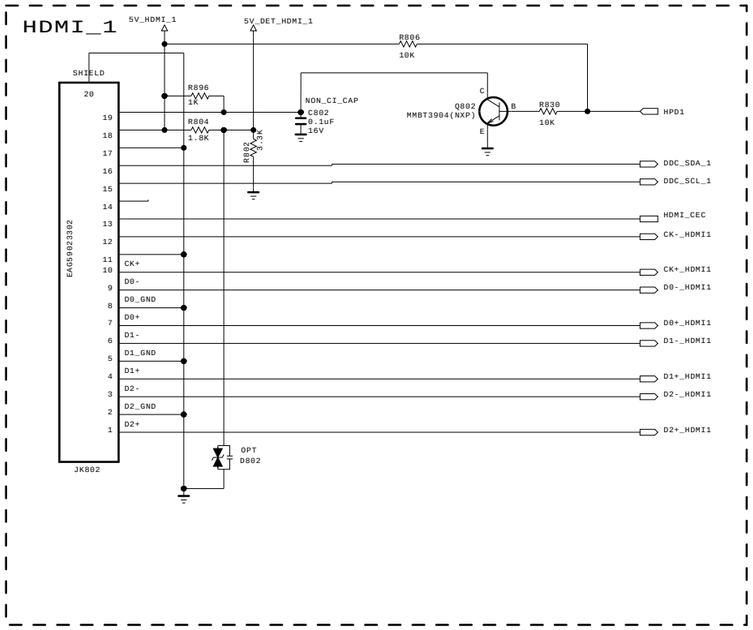
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

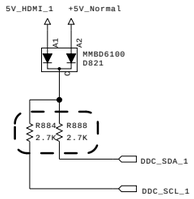
SECRET
LGElectronics

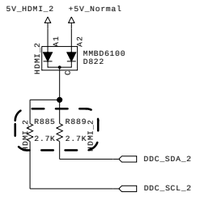
LG ELECTRONICS

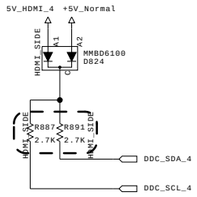
MODEL	GP4_S7LR2	DATE	10/08/13
BLOCK	USB_OCP_DIODE	SHEET	7 /

HDMI

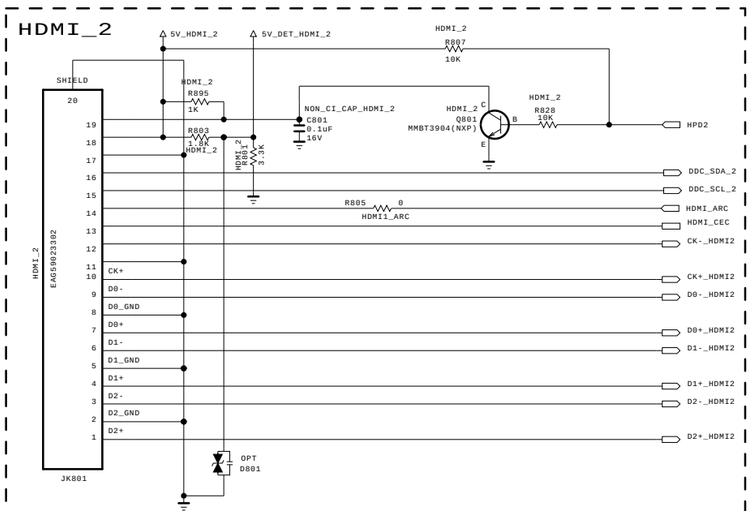


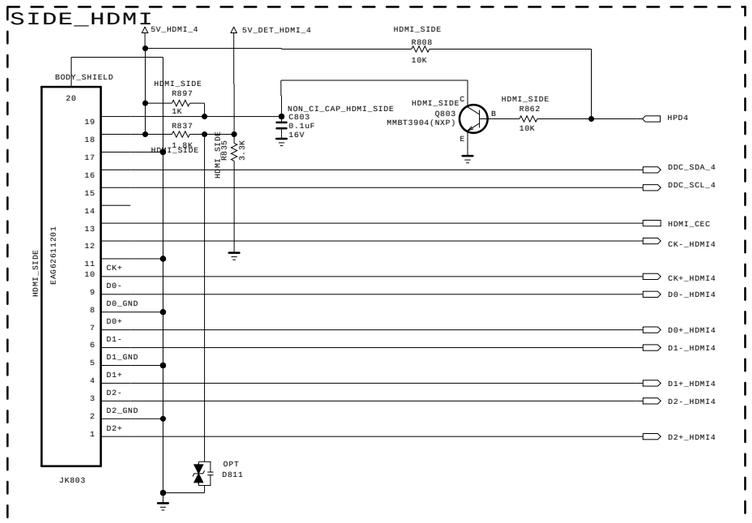


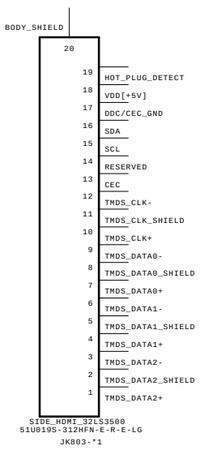




For CEC







THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

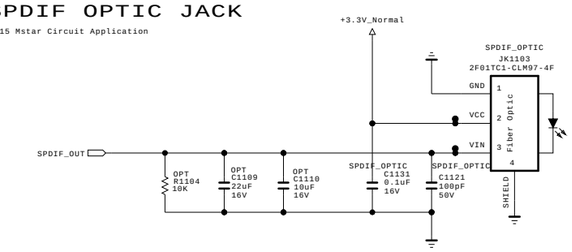
MODEL	GP4L_S7LR2	DATE	2011.10.04
BLOCK	HDMI	SHEET	8

LGE Internal Use Only

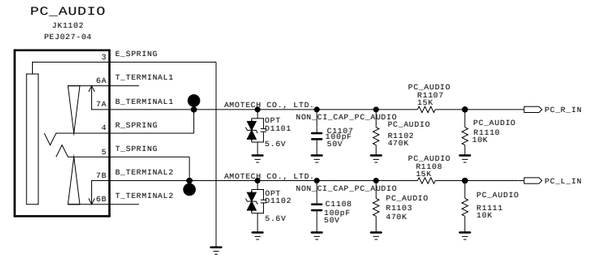
RGB-PC / SPDIF

SPDIF OPTIC JACK

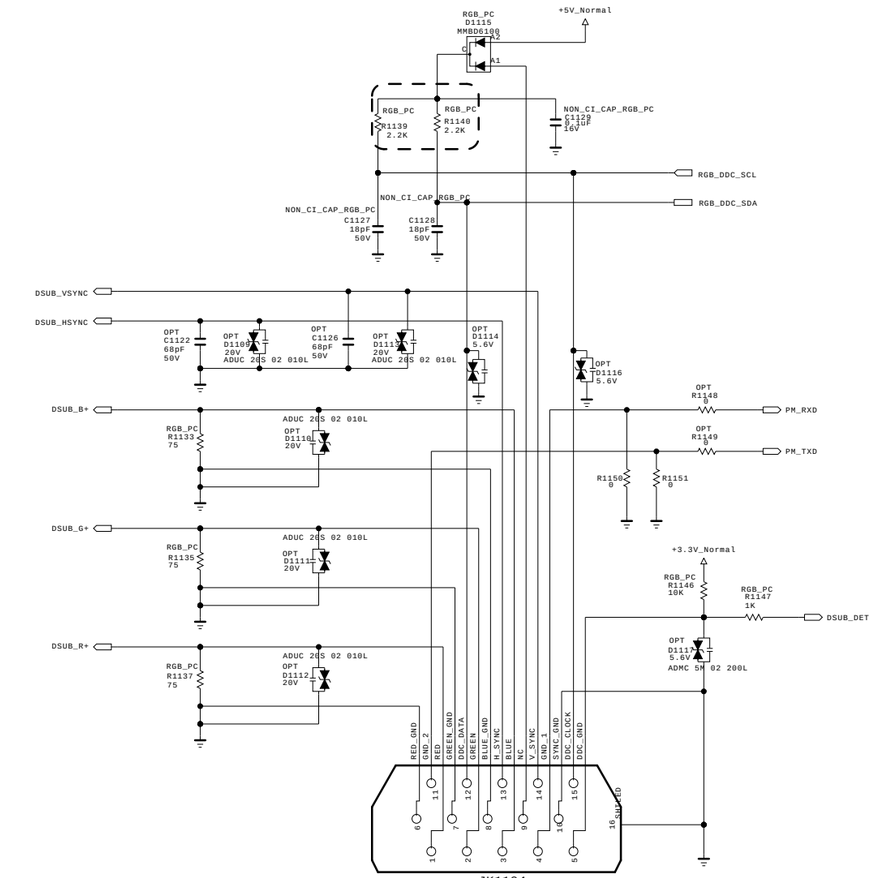
5.15 Mstar Circuit Application



PC AUDIO



RGB PC



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

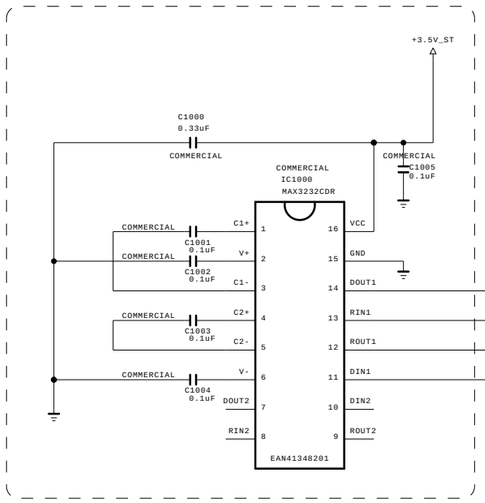
LGElectronics

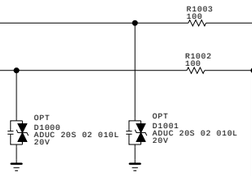
LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/09/27
BLOCK	RGB-PC/SPDIF	SHEET	9

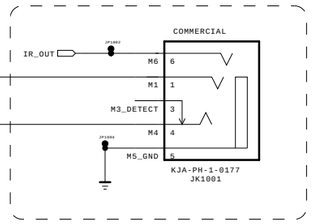
RS-232C

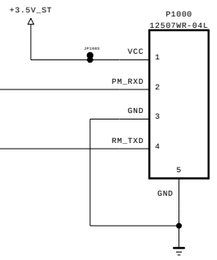
COMMERCIAL MODEL OPTION





COMMERCIAL MODEL OPTION





For Comsumer model,
use 4PIN Wafer.

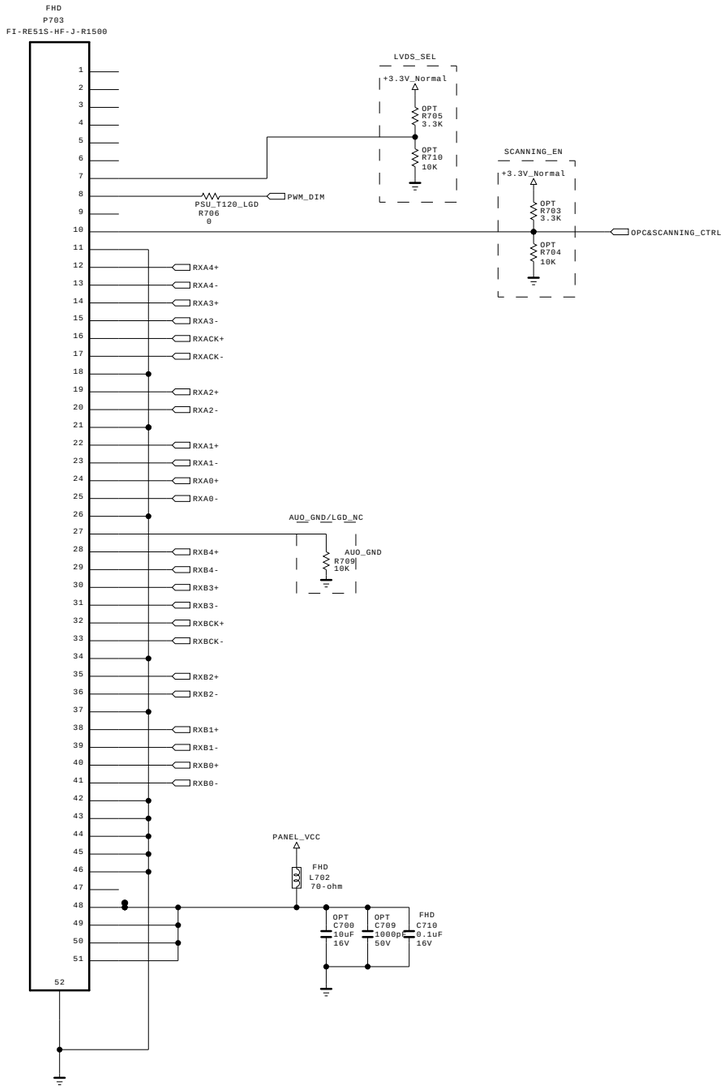
SECRET
LGElectronics

LG ELECTRONICS

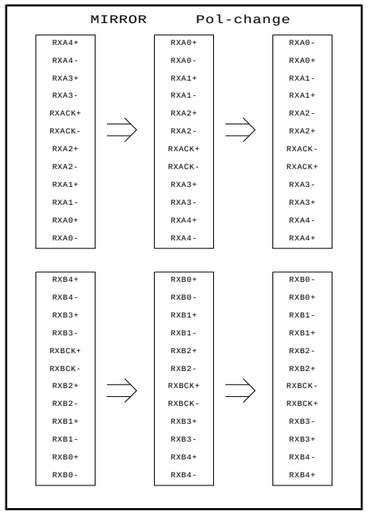
MODEL	GP4L_S7LR2	DATE	2011/08/13
BLOCK	RS232C_PHONE	SHEET	10 /

LVDS for large inch

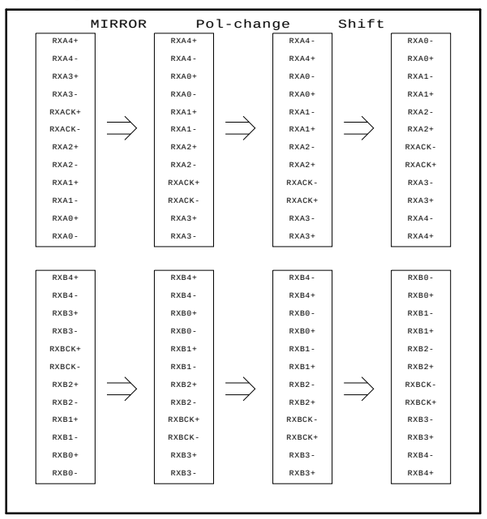
[51Pin LVDS Connector] (For FHD 60Hz)



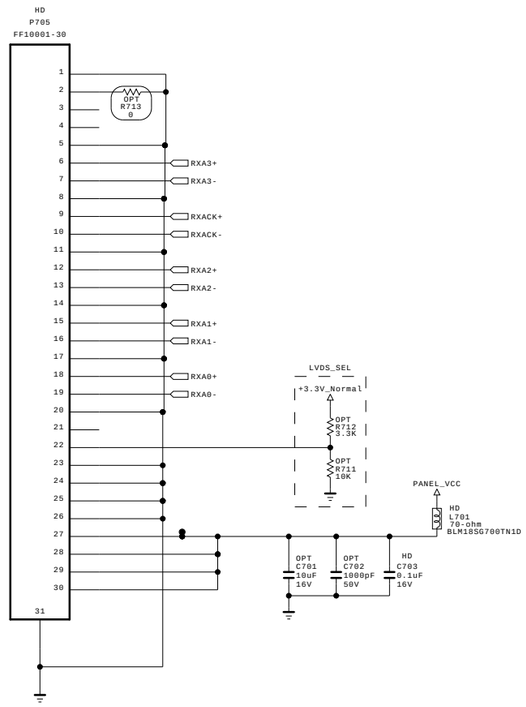
FOR FHD REVERSE(10bit) Change in S7LR



FOR FHD REVERSE(8bit) Change in S7LR



[30Pin LVDS Connector] (For HD 60Hz_Normal)

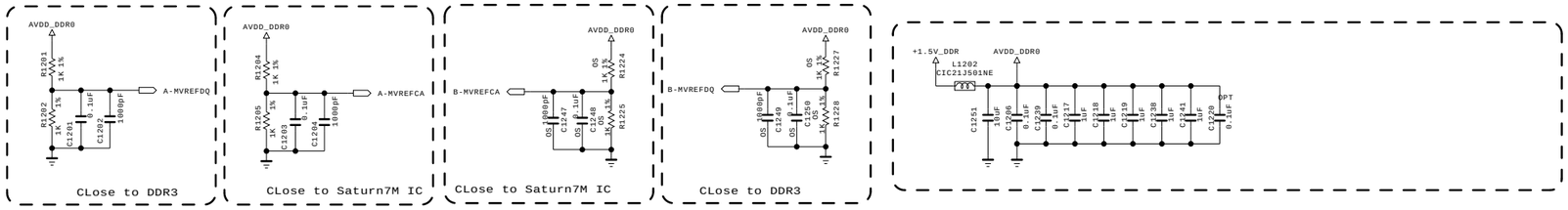


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

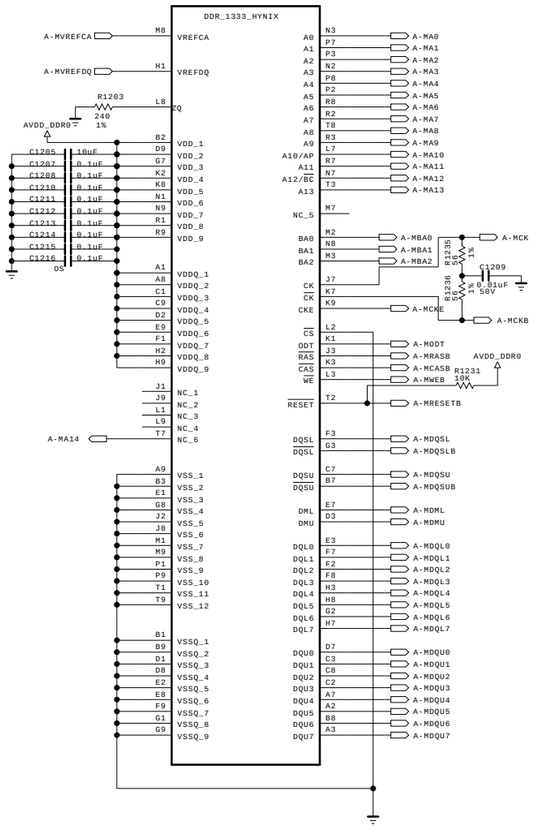
MODEL	GP4L_S7LR2	DATE	2011/11/14
BLOCK	LVDS_LARGE	SHEET	11



EAN61828901

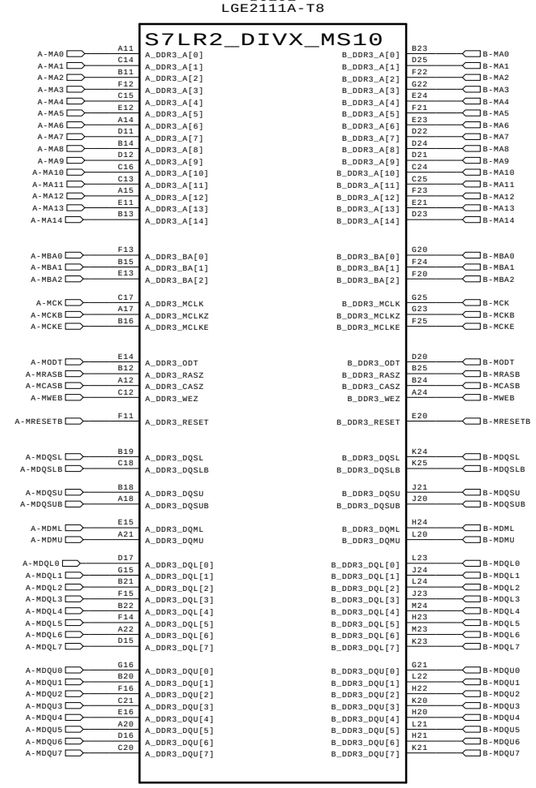
IC1201 H5TQ1G63DFR-H9C

DDR_1333_HYNIX



IC101 LGE2111A-T8

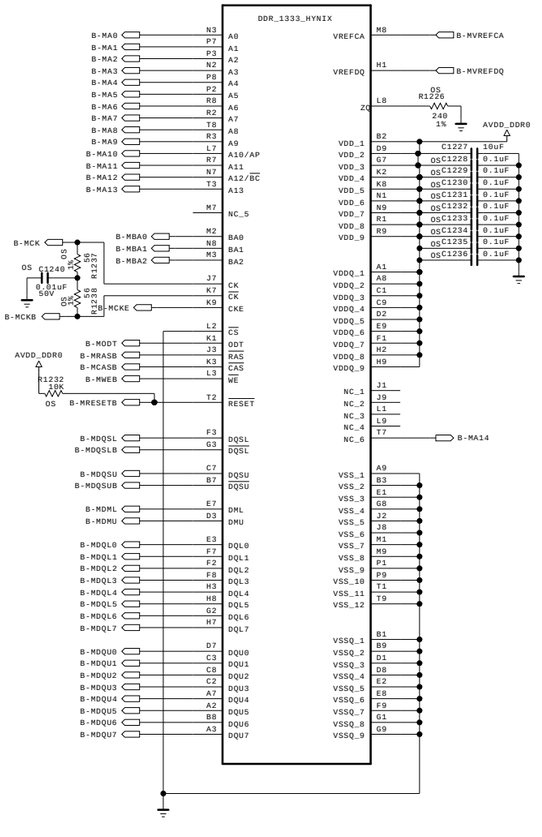
S7LR2_DIVX_MS10



EAN61828901

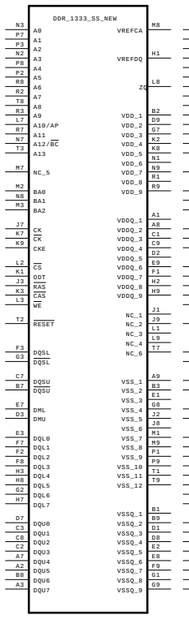
IC1202 H5TQ1G63DFR-H9C

DDR_1333_HYNIX



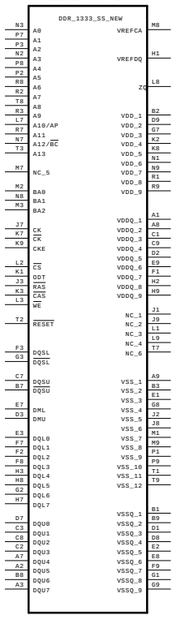
IC1201-*1 K4B1G1646G-BCH9

DDR_1333_SS_NEW



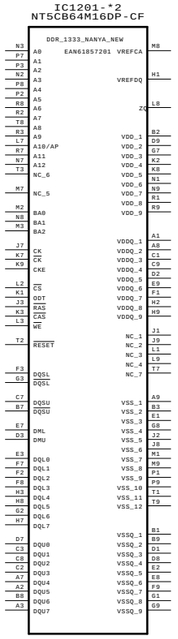
IC1202-*1 K4B1G1646G-BCH9

DDR_1333_SS_NEW



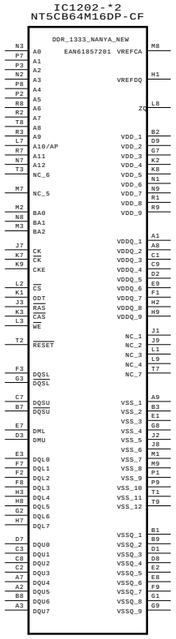
IC1201-*2 NT5CB64M16DP-CF

DDR_1333_NANYA_NEW



IC1202-*2 NT5CB64M16DP-CF

DDR_1333_NANYA_NEW



DDR_1600_SS IC1201-*K K4B1G1646G-BCK0

DDR_1600_SS IC1202-*K K4B1G1646G-BCK0

DDR_1600_HYNIX IC1201-*G H5TQ1G63DFR-PBC

DDR_1600_HYNIX IC1202-*G H5TQ1G63DFR-PBC

DDR_DVB_T2_2G IC1201-*E K4B2G1646C

DDR_DVB_T2_2G IC1202-*E K4B2G1646C

DDR_1600_MICRON IC1201-*F MT41J64M16JT-125:G

DDR_1600_MICRON IC1202-*F MT41J64M16JT-125:G

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

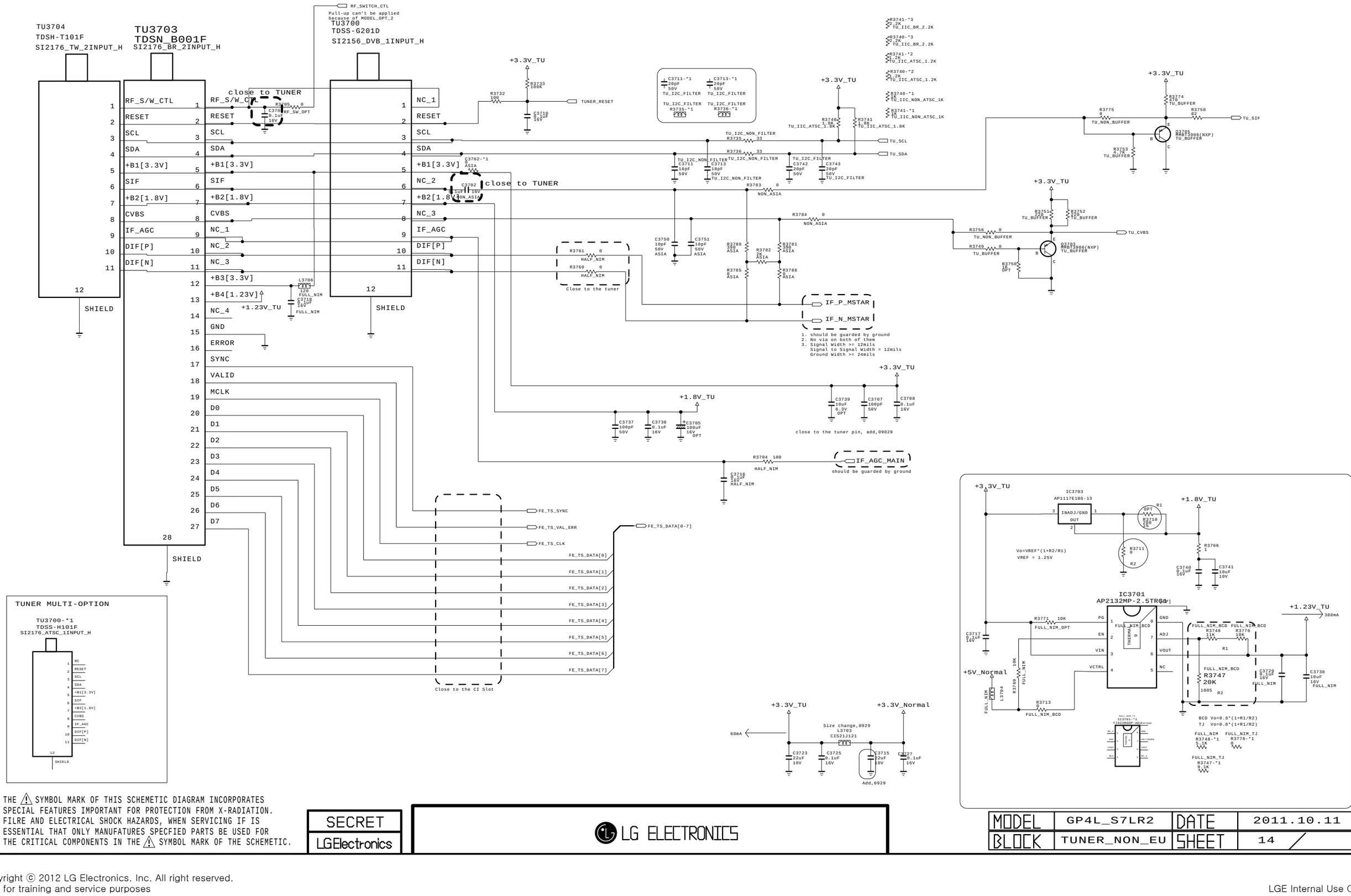
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/06/03
BLOCK	DDR_256	SHEET	12 /

GLOBAL tuner block except EU and China



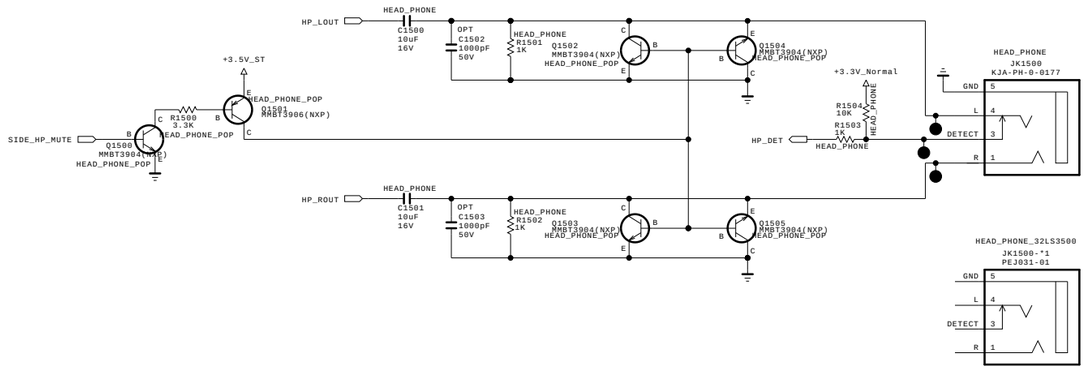
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.10.11
BLOCK	TUNER_NON_EU	SHEET	14

Headphone *Option : HEAD_PHONE



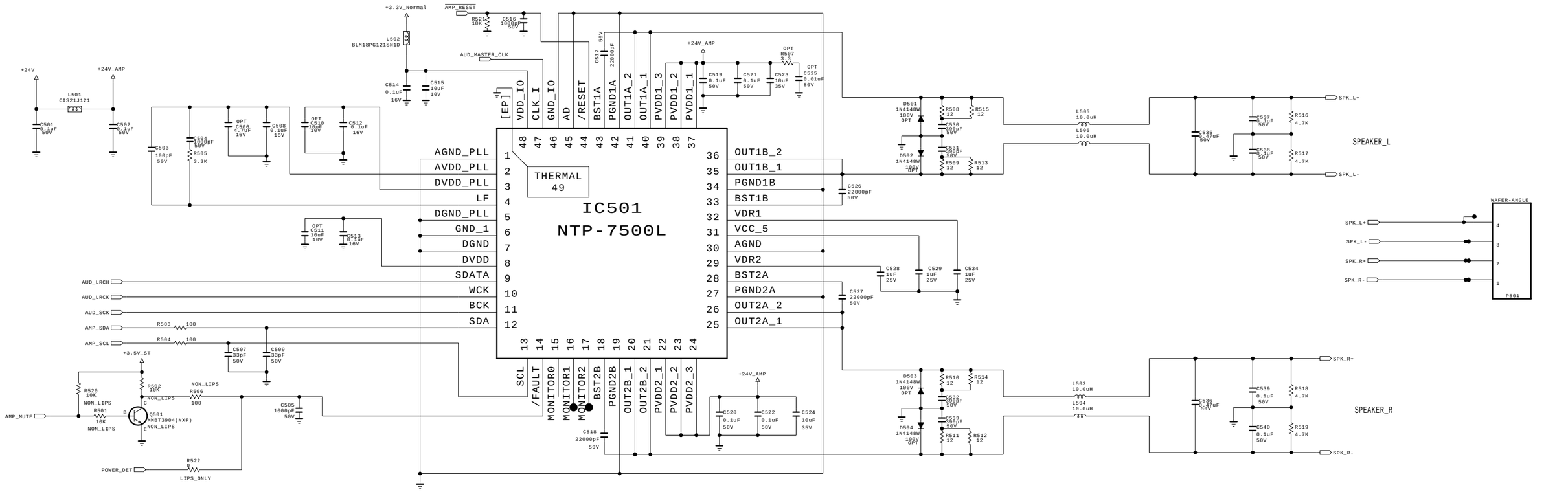
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/10/04
BLOCK	HEADPHONE	SHEET	15

Audio amp(NTP-7500)



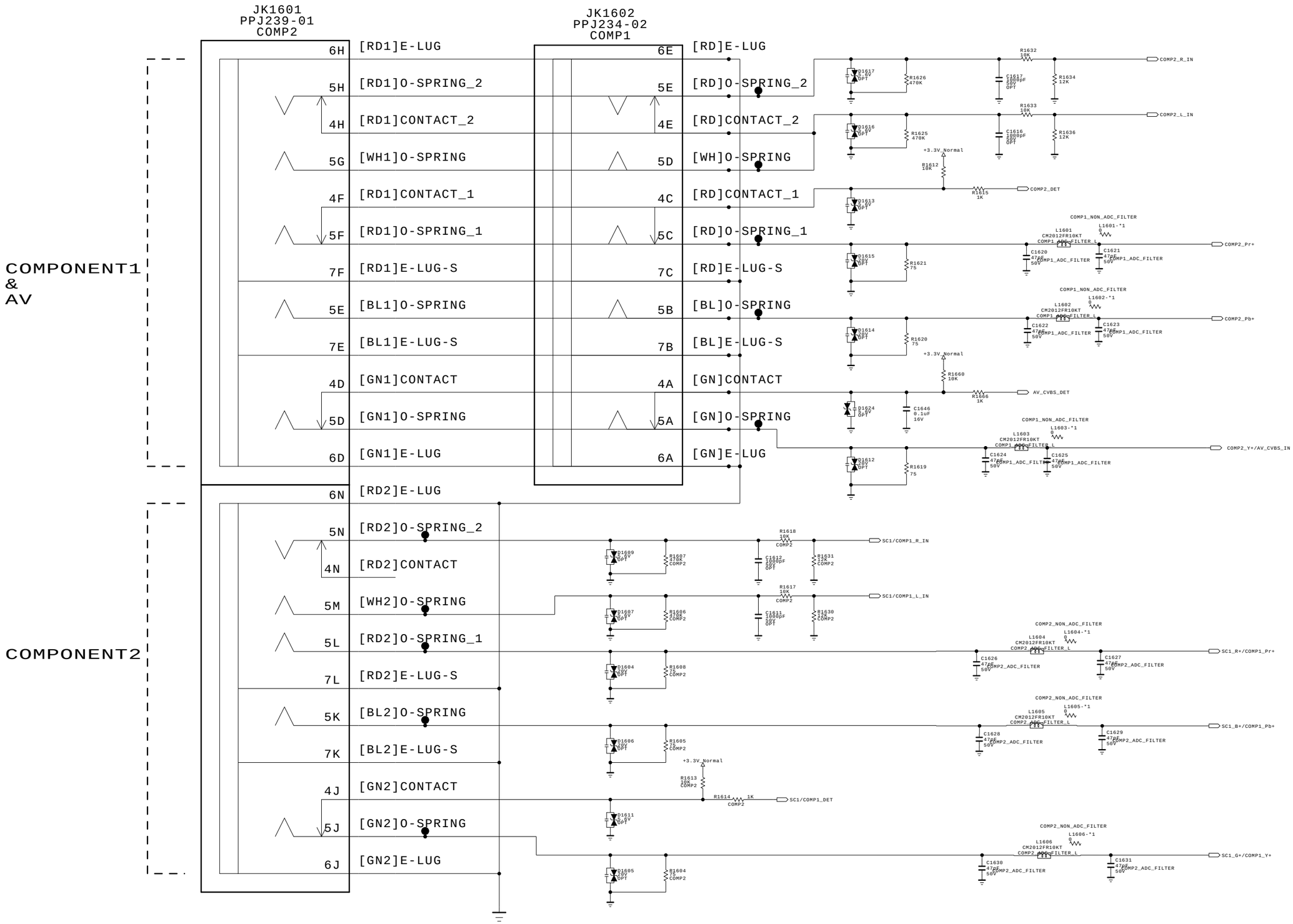
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.10.04
BLOCK	NTP-7500	SHEET	16 /

COMPONENT1 & AV(COMMON), COMPONENT2



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

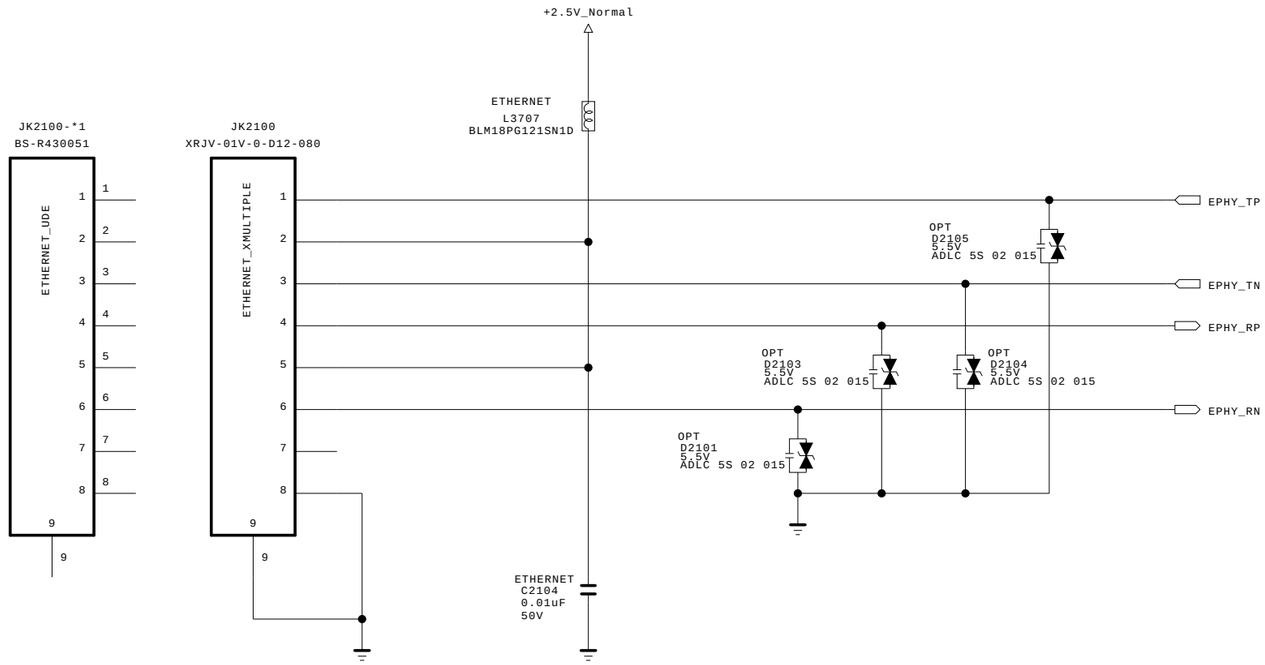
SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.11.02
BLOCK	REAR_NON_EU_L	SHEET	17

ETHERNET

* H/W option : ETHERNET



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

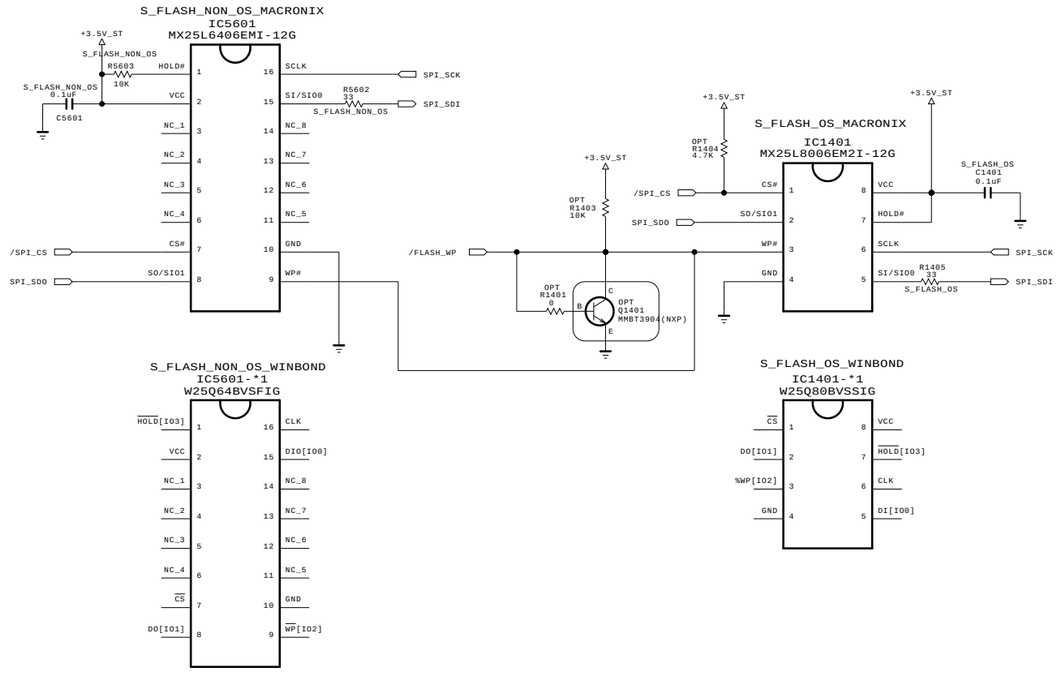
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/06/14
BLOCK	ETHERNET	SHEET	21 /

Serial Flash for SPI boot_NON_OS and OS



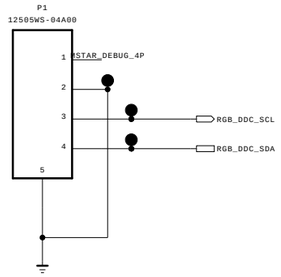
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR	DATE	2011.08.29
BLOCK	Serial FLASH	SHEET	56

MSTART DEBUG_4PIN



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

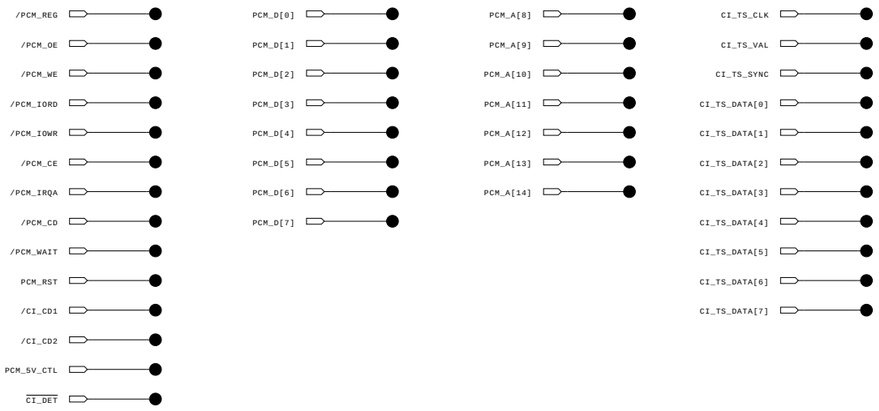
SECRET
LGElectronics

LG ELECTRONICS

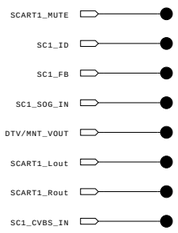
MODEL	GP4L_S7LR2	DATE	2011/09/05
BLOCK	MSTAR DEBUG_4PIN	SHEET	58

TP for NON-EU models(except EU and China)

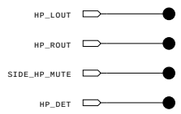
TP for CI slot



TP for SCART



TP for Headphone



TP for S2

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

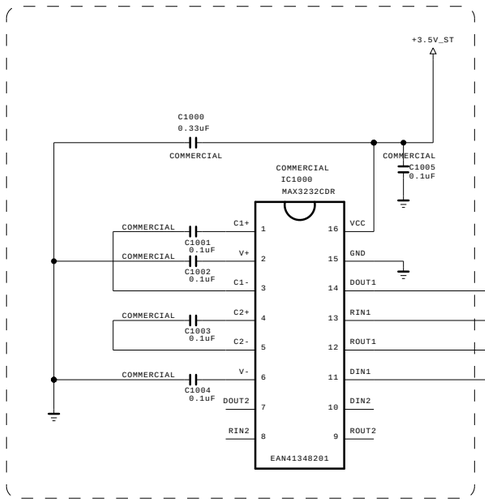
SECRET
LGElectronics

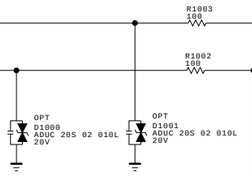
LG ELECTRONICS

MODEL	GP4_S7LR2	DATE	2011.07.07
BLOCK	TP_NON_EN	SHEET	3 /

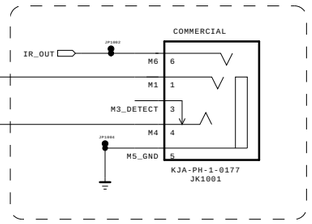
RS-232C

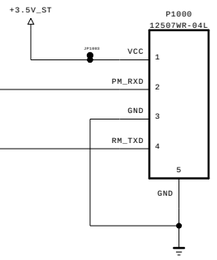
COMMERCIAL MODEL OPTION





COMMERCIAL MODEL OPTION



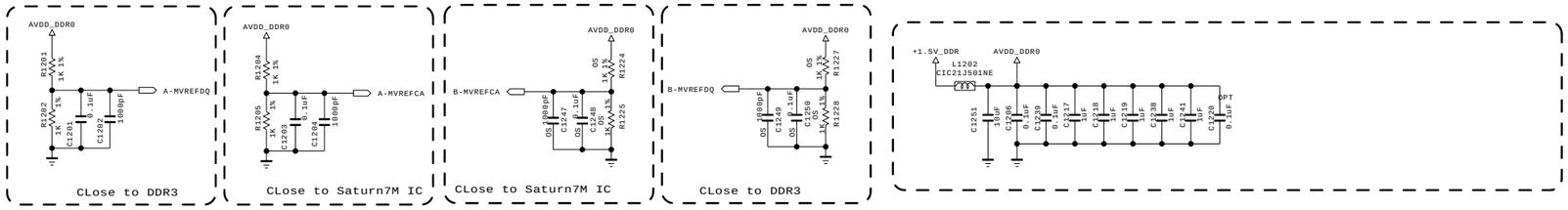


For Comsumer model,
use 4PIN Wafer.

SECRET
LGElectronics

LG ELECTRONICS

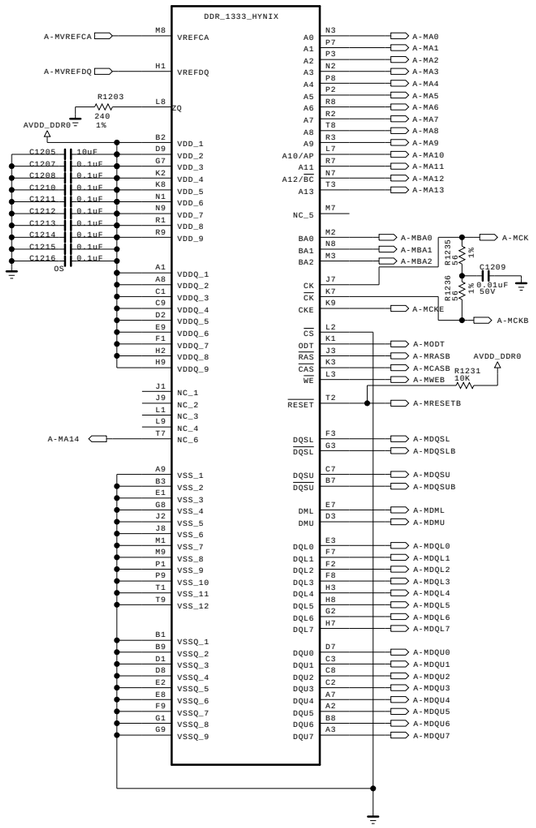
MODEL	GP4L_S7LR2	DATE	2011/08/13
BLOCK	RS232C_PHONE	SHEET	10 /



EAN61828901

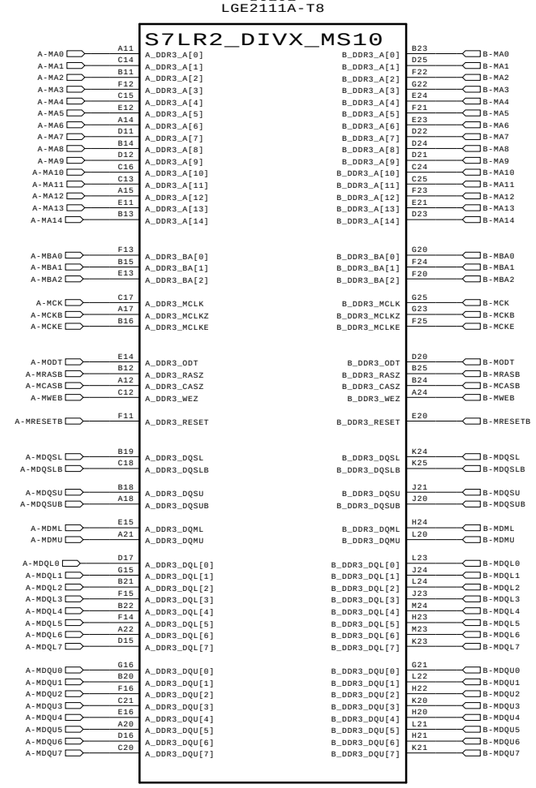
IC1201 H5TQ1G63DFR-H9C

DDR_1333_HYNIX



IC101 LGE2111A-T8

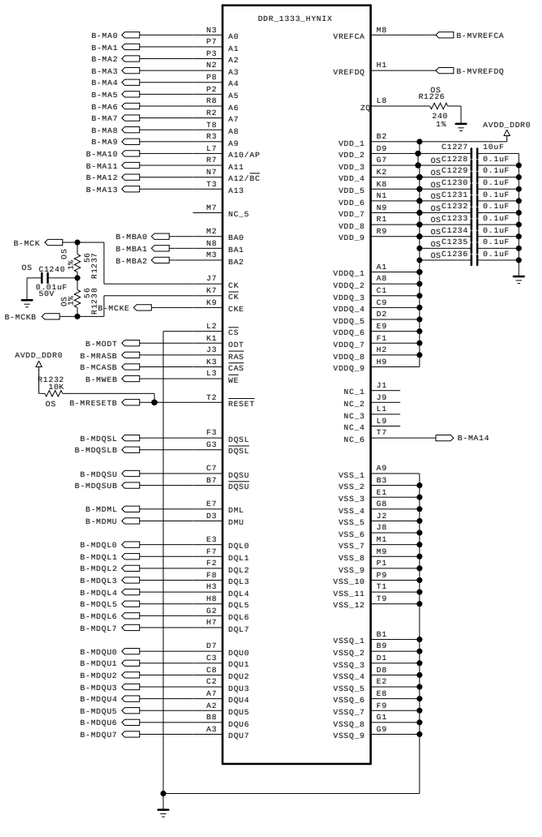
S7LR2_DIVX_MS10



EAN61828901

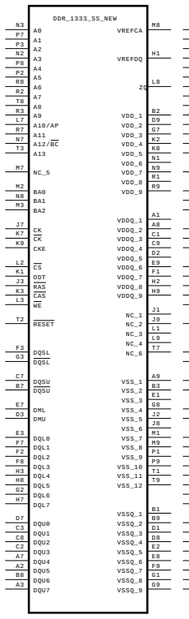
IC1202 H5TQ1G63DFR-H9C

DDR_1333_HYNIX



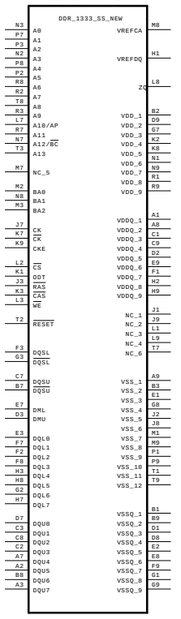
IC1201-*1 K4B1G1646G-BCH9

DDR_1333_SS_NEW



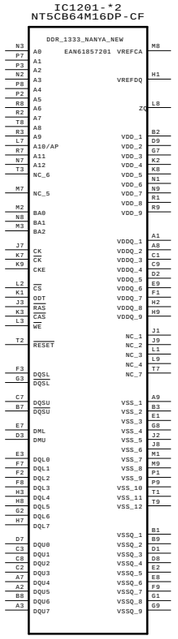
IC1202-*1 K4B1G1646G-BCH9

DDR_1333_SS_NEW



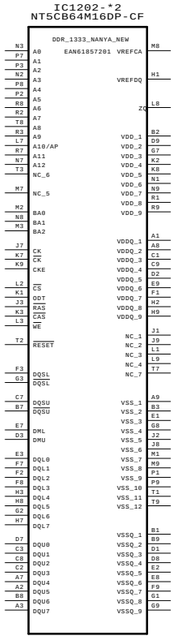
IC1201-*2 NT5CB64M16DP-CF

DDR_1333_NANYA_NEW



IC1202-*2 NT5CB64M16DP-CF

DDR_1333_NANYA_NEW



DDR_1600_SS IC1201-*K K4B1G1646G-BCK0

DDR_1600_SS IC1202-*K K4B1G1646G-BCK0

DDR_1600_HYNIX IC1201-*G H5TQ1G63DFR-PBC

DDR_1600_HYNIX IC1202-*G H5TQ1G63DFR-PBC

DDR_DVB_T2_2G IC1201-*E K4B2G1646C

DDR_DVB_T2_2G IC1202-*E K4B2G1646C

DDR_1600_MICRON IC1201-*F MT41J64M16JT-125:G

DDR_1600_MICRON IC1202-*F MT41J64M16JT-125:G

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

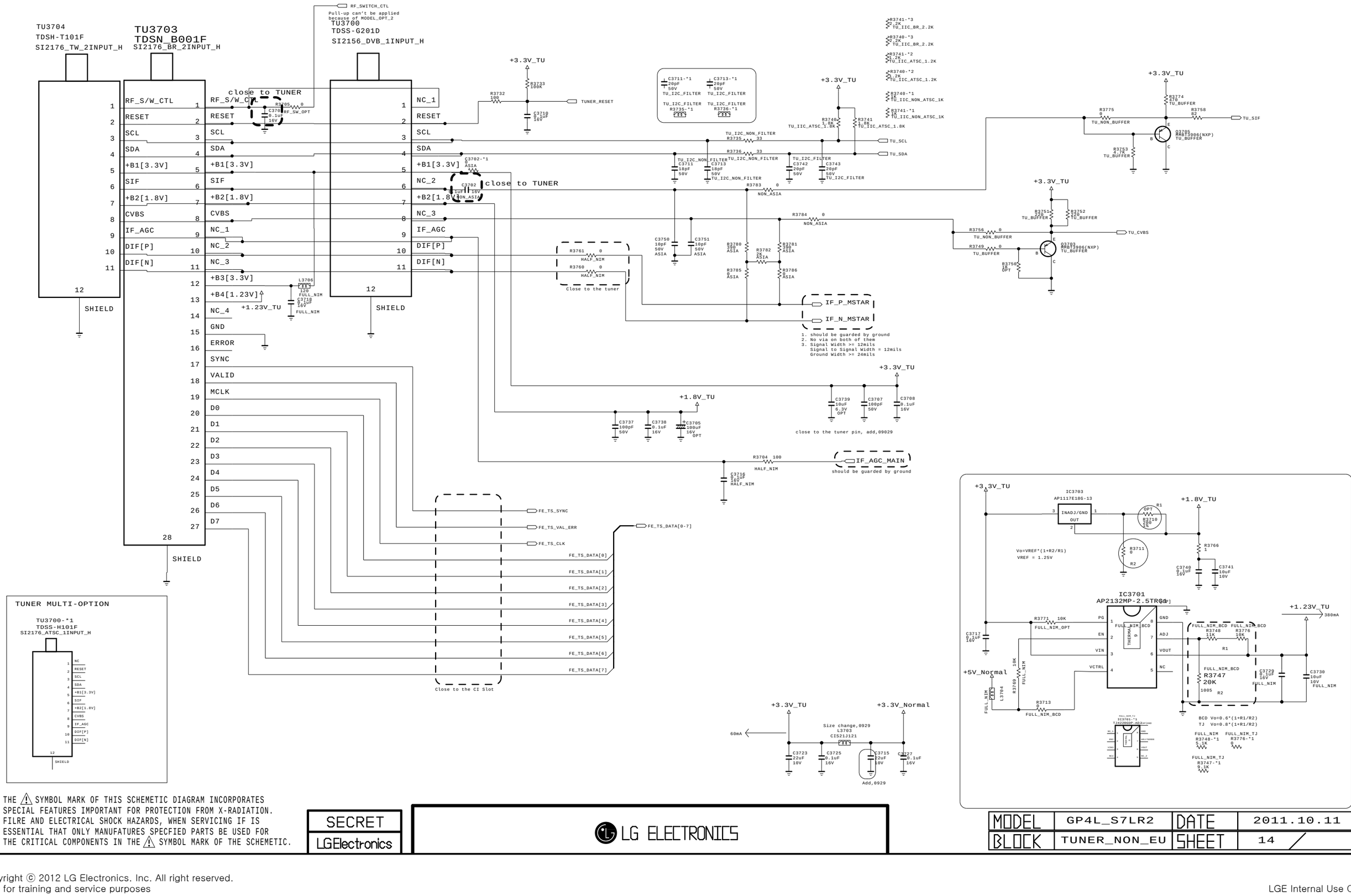
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/06/03
BLOCK	DDR_256	SHEET	12 /

GLOBAL tuner block except EU and China



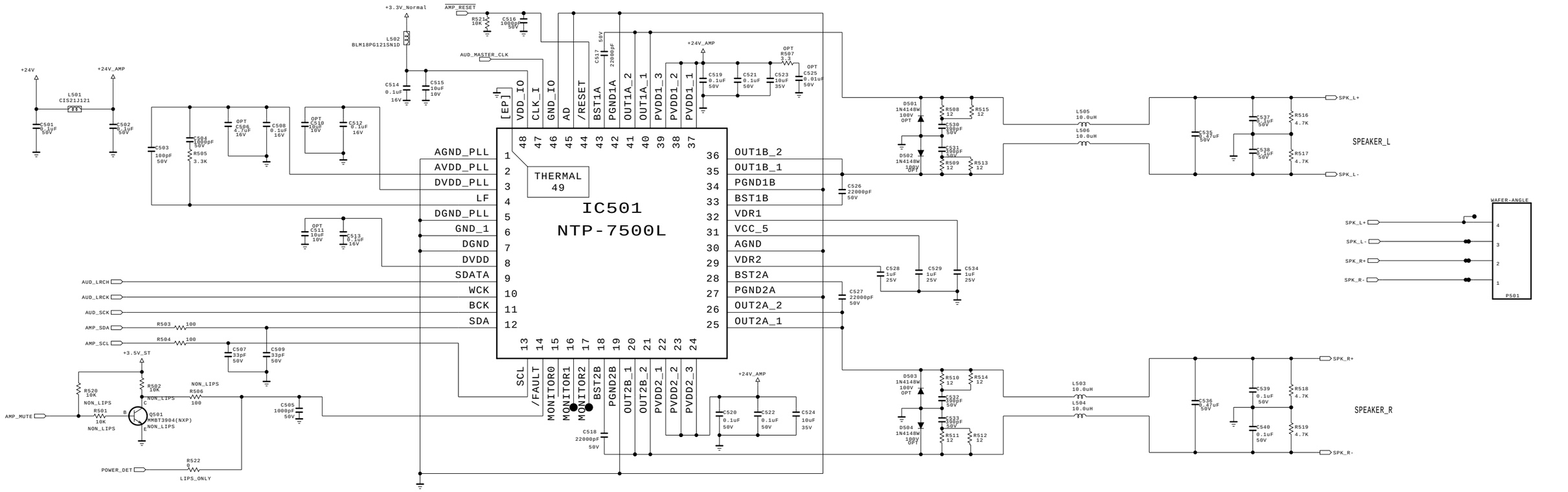
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.10.11
BLOCK	TUNER_NON_EU	SHEET	14

Audio amp(NTP-7500)



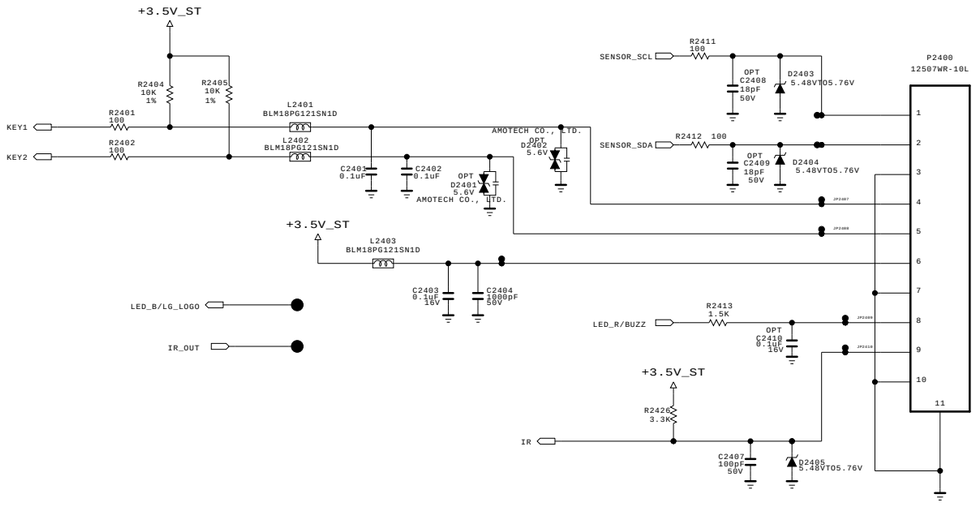
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.10.04
BLOCK	NTP-7500	SHEET	16 /

IR/LED and control for on.y ’12 sub without IR-OUT.



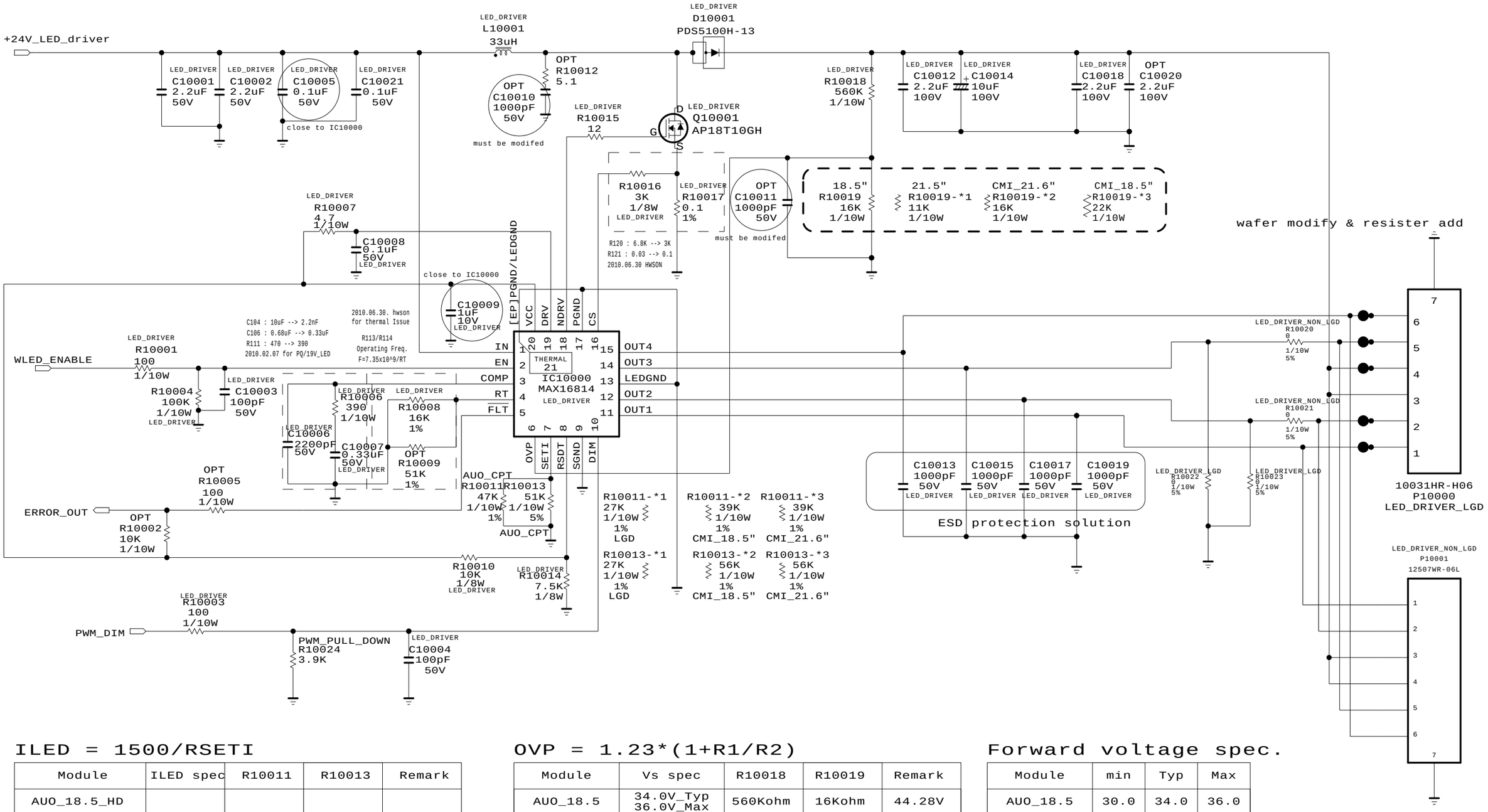
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/08/17
BLOCK	IR/CONTROL_W/O_IR_OUT	SHEET	23

LED driver circuit for TN module



ILED = 1500/RSETI

Module	ILED spec	R10011	R10013	Remark
AUO_18.5_HD	60mA_Typ 63mA_Max	47Kohm	51Kohm	61.35mA
AUO_21.5_FHD				
CPT_21.5_FHD				
LGD_21.5_FHD	110mA_Typ 120mA_Max	27Kohm	27Kohm	111.11mA
CMI_18.51_HD	65mA_Typ 70mA_Max	39Kohm	56Kohm	65.24mA
CMI_21.6_FHD	65mA_Typ 70mA_Max	39Kohm	56Kohm	65.24mA

OVP = 1.23*(1+R1/R2)

Module	Vs spec	R10018	R10019	Remark
AUO_18.5	34.0V_Typ 36.0V_Max	560Kohm	16Kohm	44.28V
AUO_21.5	52.8V_Typ 57.6V_Max	560Kohm	11Kohm	63.85V
CPT_21.5	52.0V_Typ 57.6V_Max	560Kohm	11Kohm	63.85V
LGD_21.5	51.2V_Typ 56.0V_Max	560Kohm	11Kohm	63.85V
CMI_18.51	24.8V_Typ 27.2V_Max	560Kohm	22Kohm	32.54V
CMI_21.6	37.8V_Typ 40.8V_Max	560Kohm	16Kohm	44.28V

Forward voltage spec.

Module	min	Typ	Max
AUO_18.5	30.0	34.0	36.0
AUO_21.5	48.0	52.8	57.6
CPT_21.5	46.4	52.0	57.6
LGD_21.5	-	51.2	56.0
CMI_18.51	-	24.8	27.2
CMI_21.6	33.6	37.8	40.8

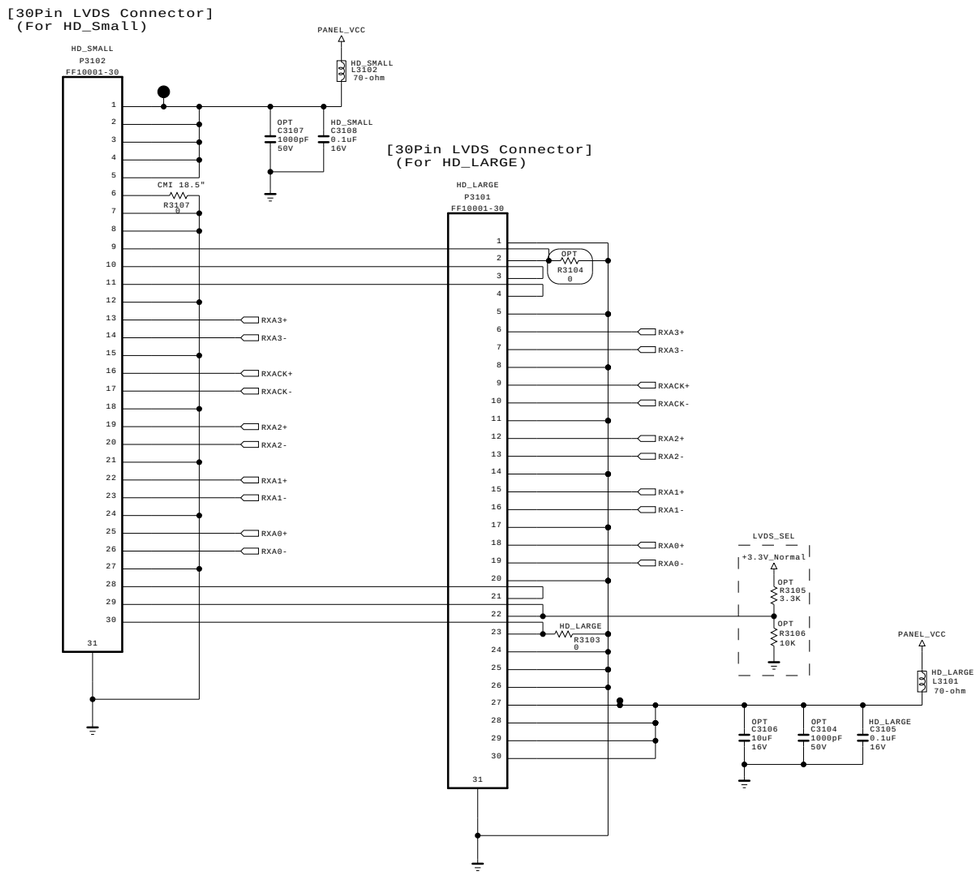
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/08/19
BLOCK	SMALL_TN_LED_DRIVER	SHEET	29

LVDS_SMALL



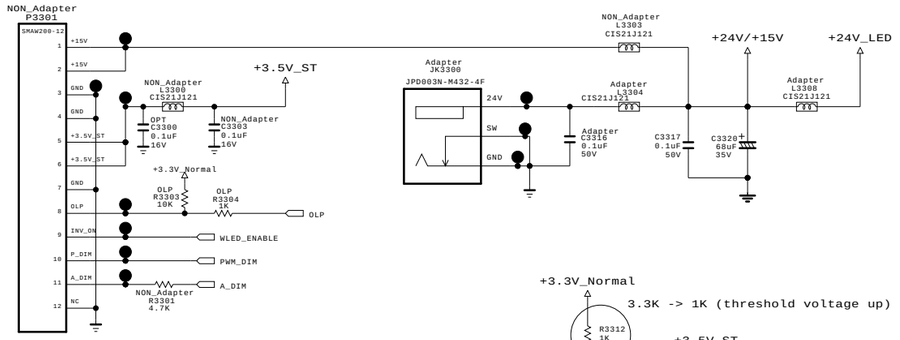
RXA4+
RXA4-
RXB4+
RXB4-
RXB3+
RXB3-
RXBCK+
RXBCK-
RXB2+
RXB2-
RXB1+
RXB1-
RXB0+
RXB0-

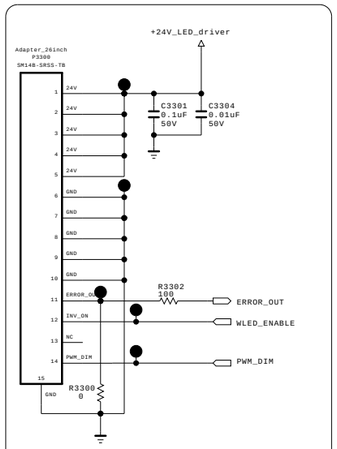
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

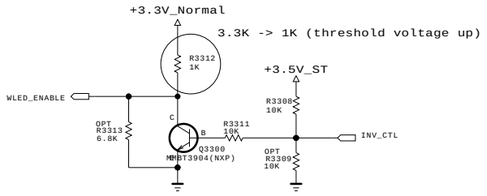
LG ELECTRONICS

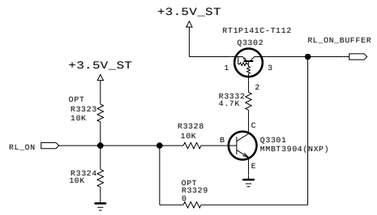
MODEL	GP4L_S7LR2	DATE	2011/09/27
BLOCK	SMALL_LVDS	SHEET	31

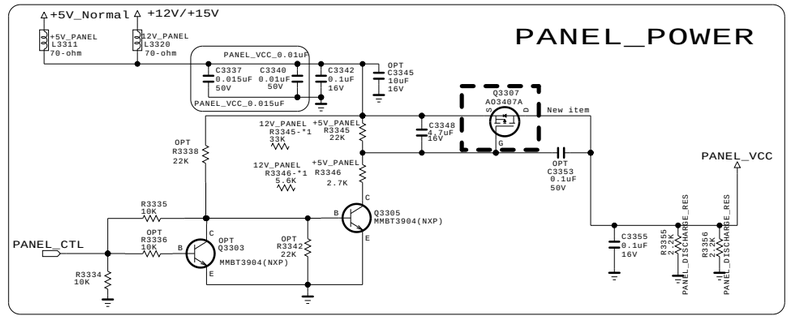


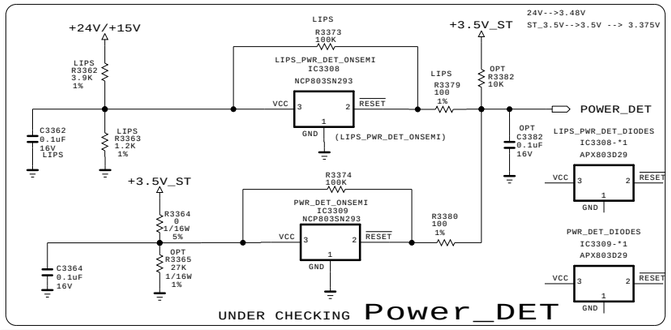


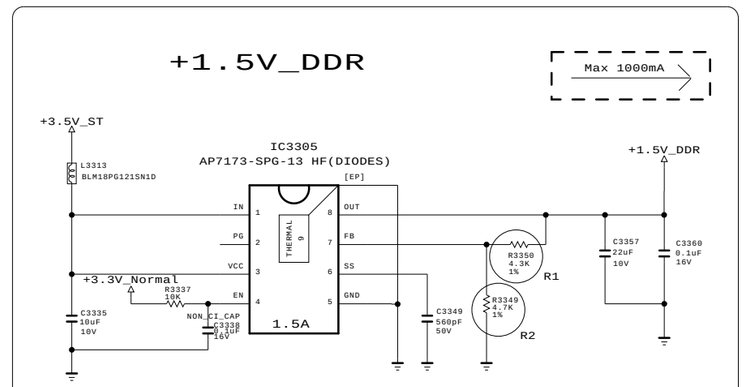
* H/W option : Adapter_26inch

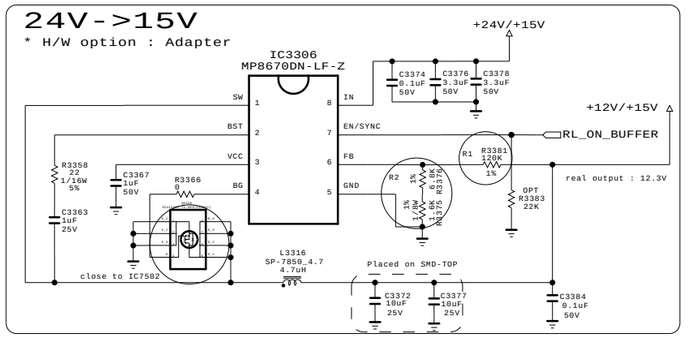


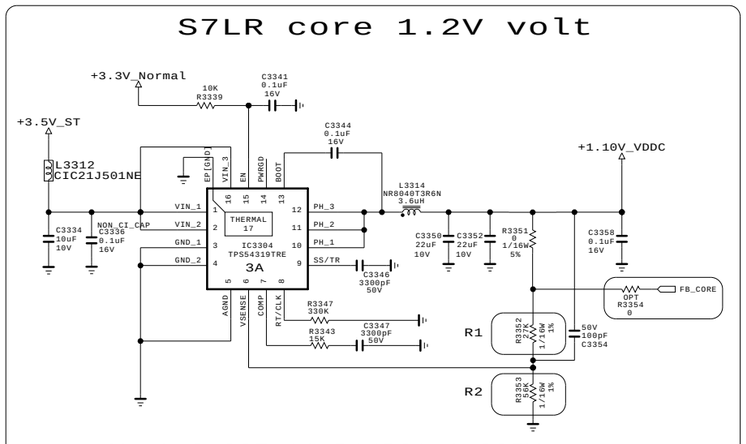


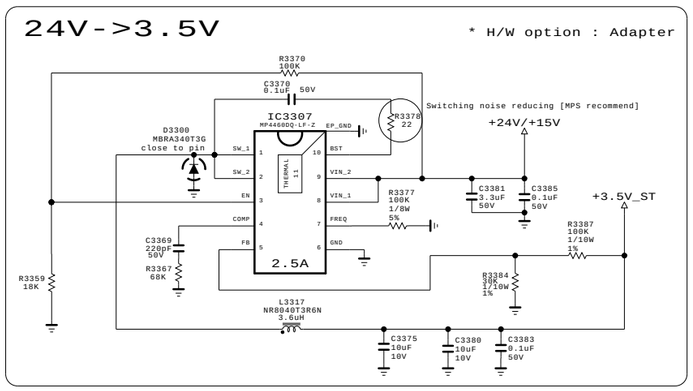


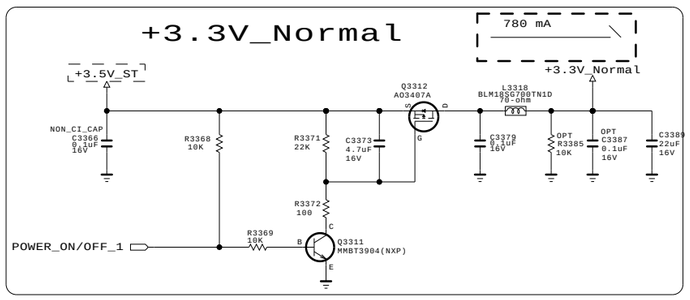


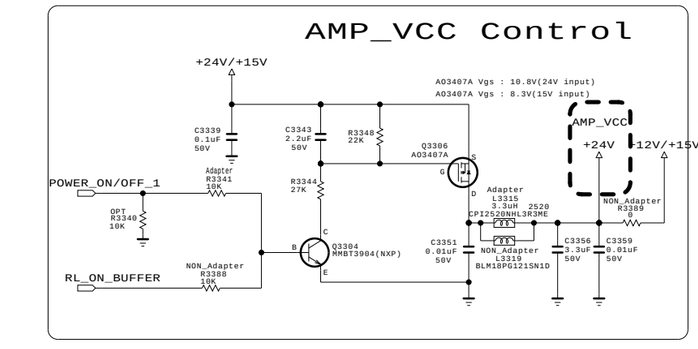


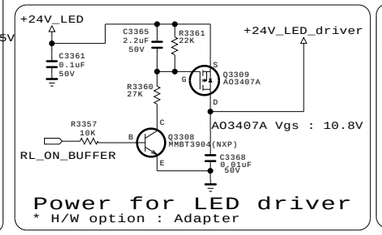


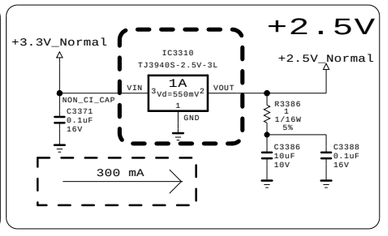


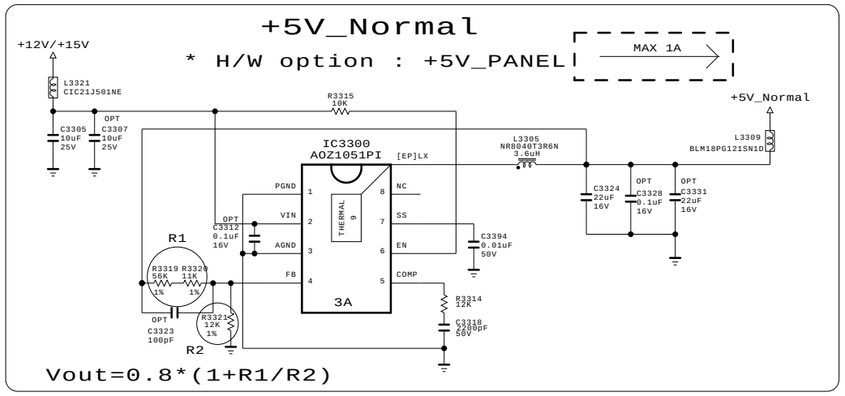


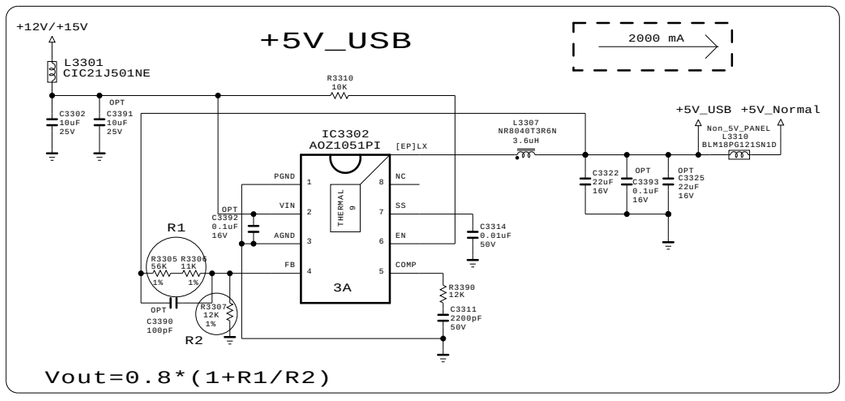










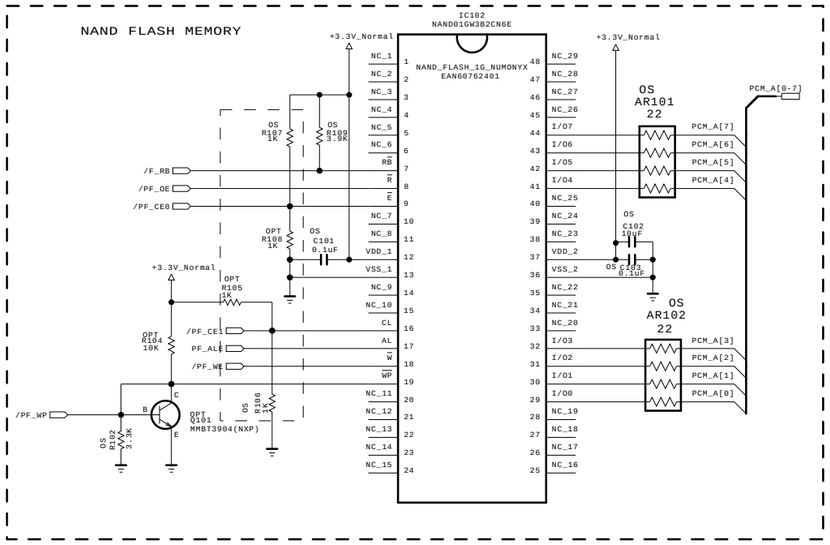


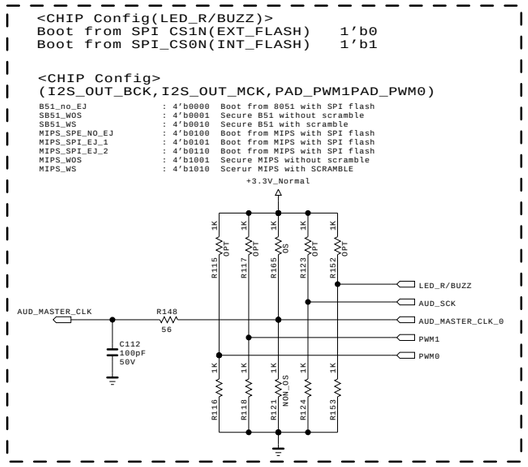
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

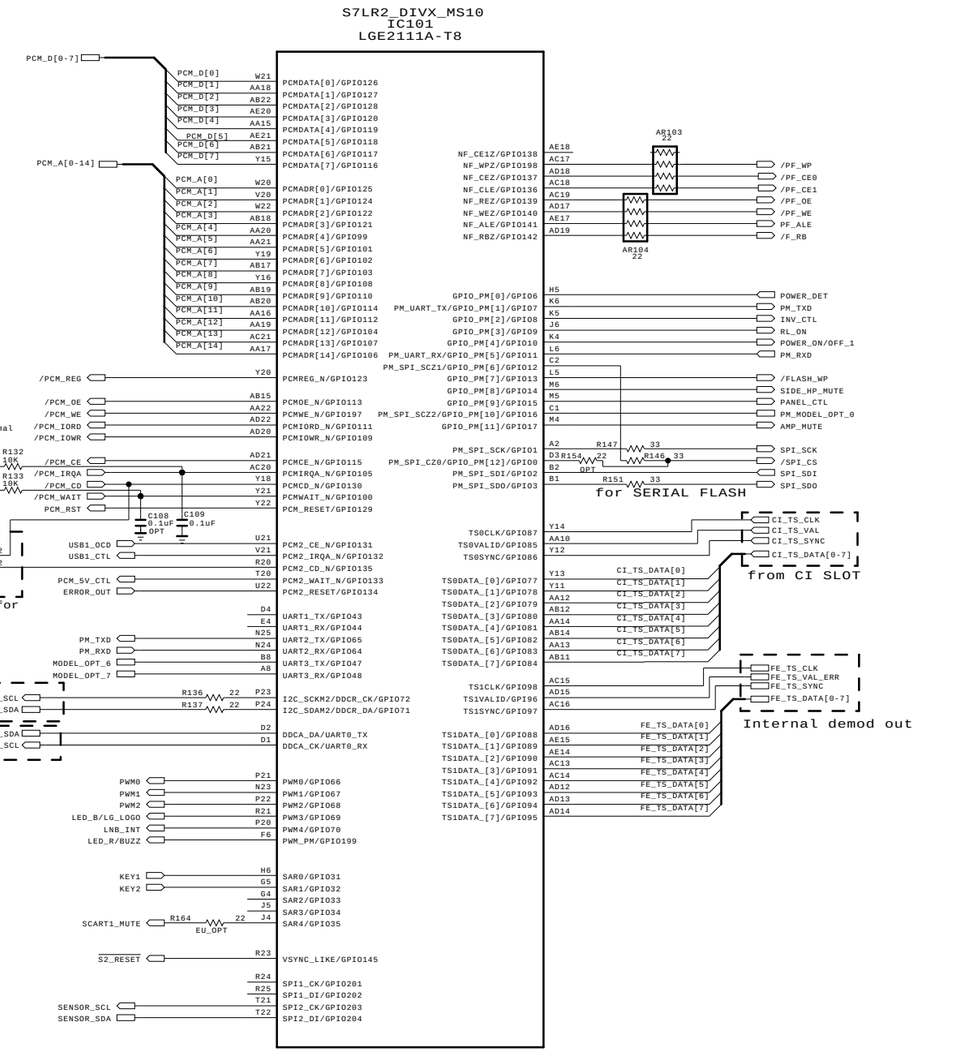
SECRET
LGElectronics

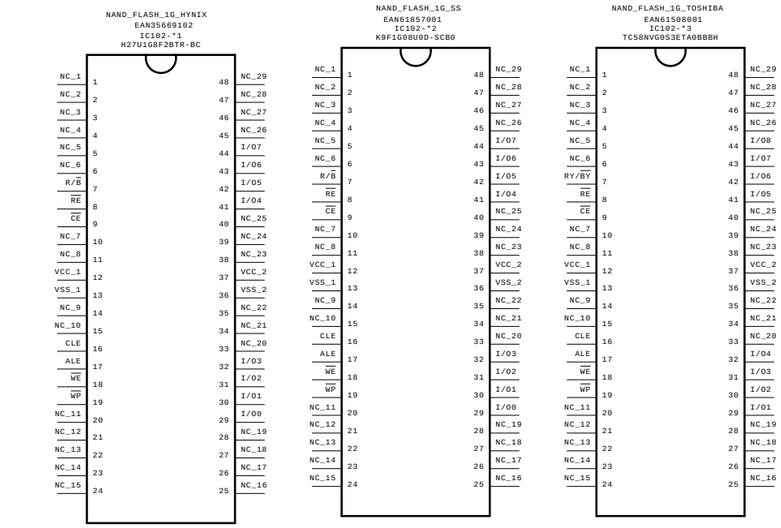
LG ELECTRONICS

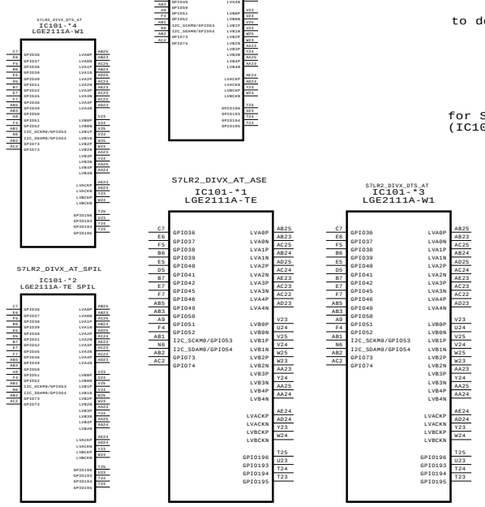
MODEL	GP4L_S7LR2	DATE	2011/10/10
BLOCK	SMALL_POWER	SHEET	33

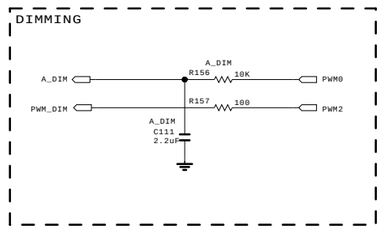


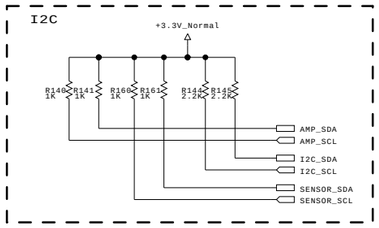


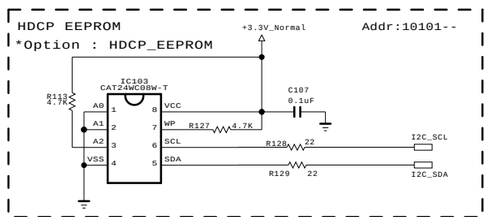


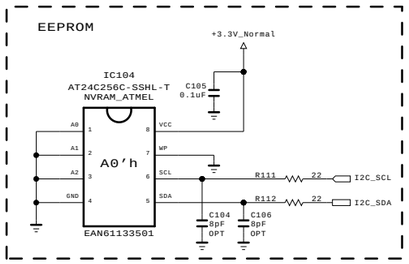


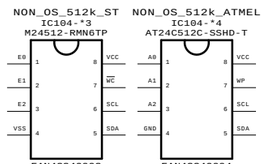


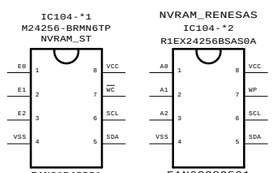


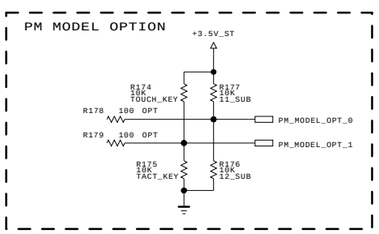


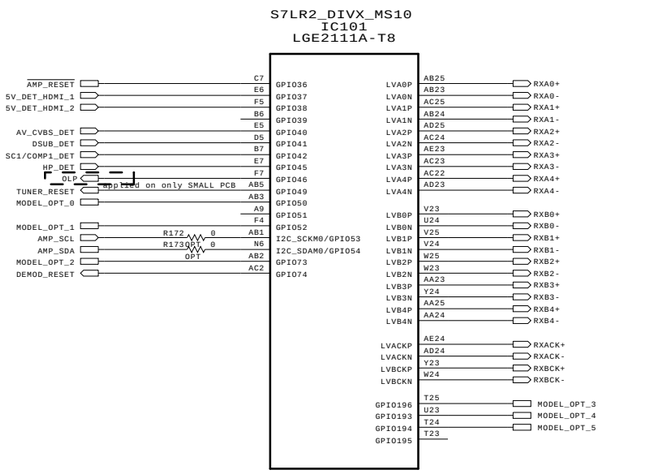












THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

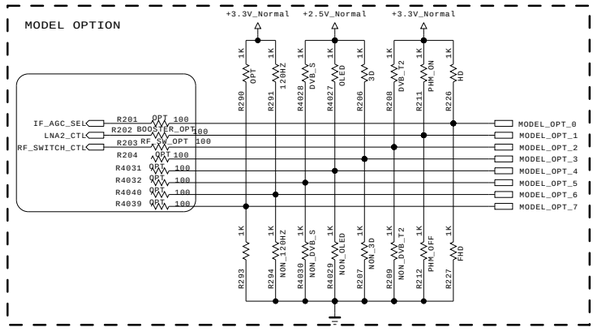
SECRET
LGElectronics

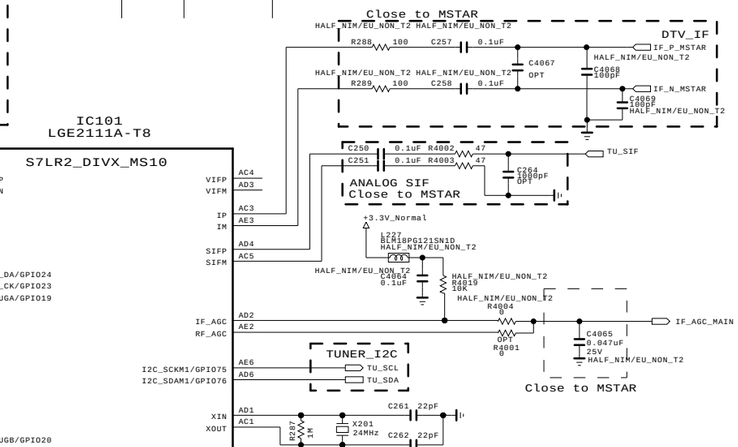
LG ELECTRONICS

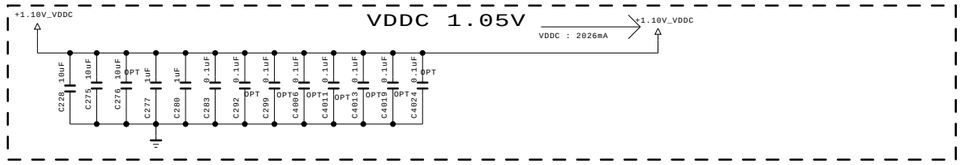
MODEL	GP4L_S7LR2	DATE	2011.11.02
BLOCK	FLASH/EEPROM/GPIO	SHEET	50

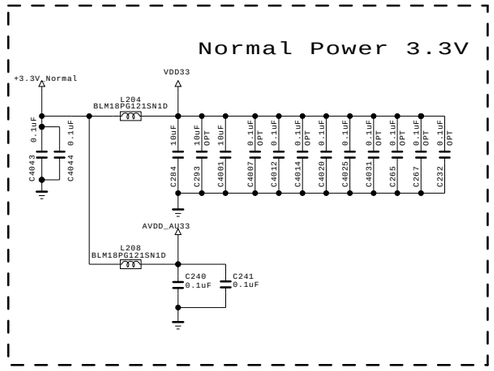
MODEL OPTION

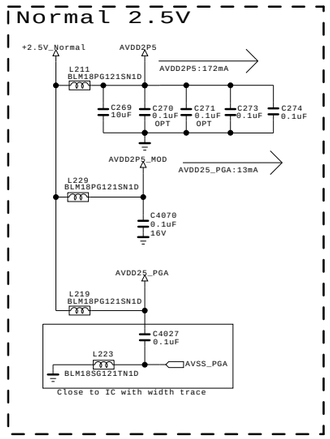
PIN NAME	PIN NO.	LOW	HIGH
MODEL_OPT_0	AB3	FHD	HD
MODEL_OPT_1	F4	PHM_OFF	PHM_ON
MODEL_OPT_2	AB2	NON_DVB_T2	DVB_T2
MODEL_OPT_3	T25	NON_3D	3D
MODEL_OPT_4	U23	NON_OLED	OLED
MODEL_OPT_5	T24	NON_DVB_S	DVB_S
MODEL_OPT_6	B8	NON_120HZ	120HZ
MODEL_OPT_7	A8	READY	READY

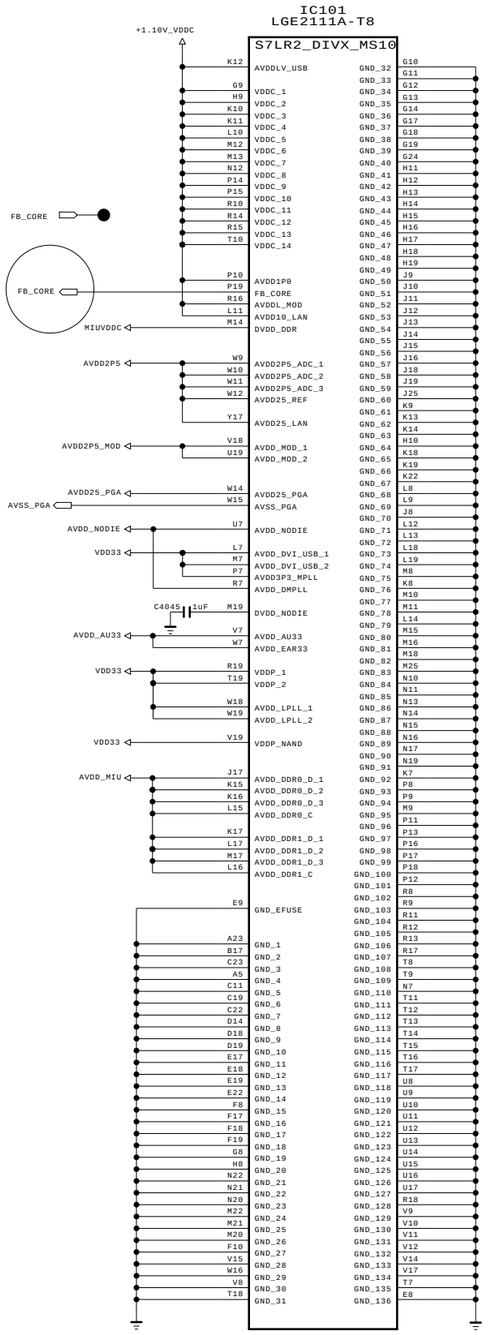


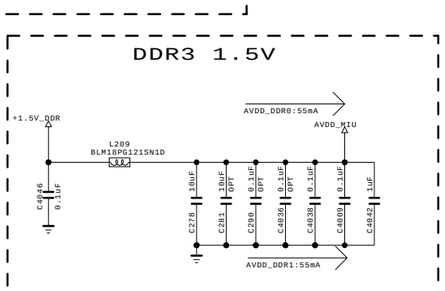


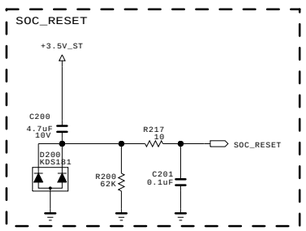


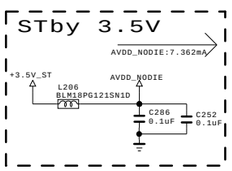


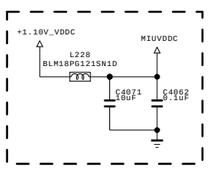












THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

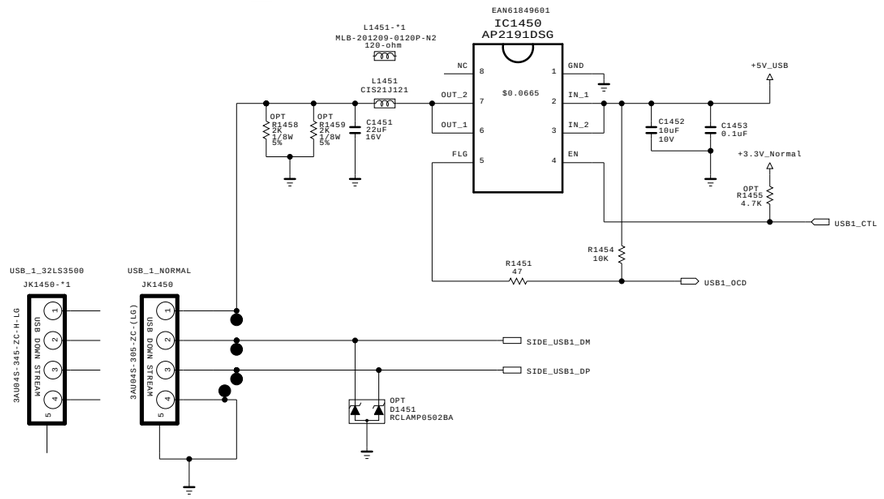
SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.08.24
BLOCK	POWER,IN/OUT,H/W OPT	SHEET	51

USB (SIDE)

USB1_DIODES



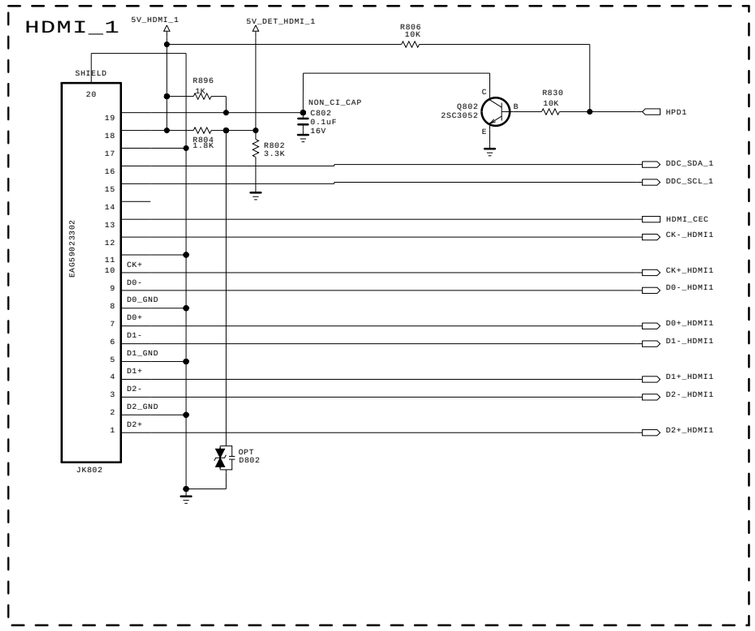
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

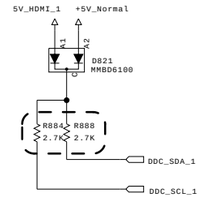
SECRET
LGElectronics

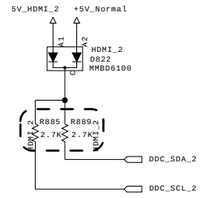
LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/11/18
BLOCK	USB_OCP_DIODE_1EA	SHEET	52

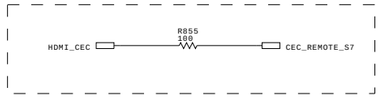
HDMI_2EA(NON SIDE HDMI)

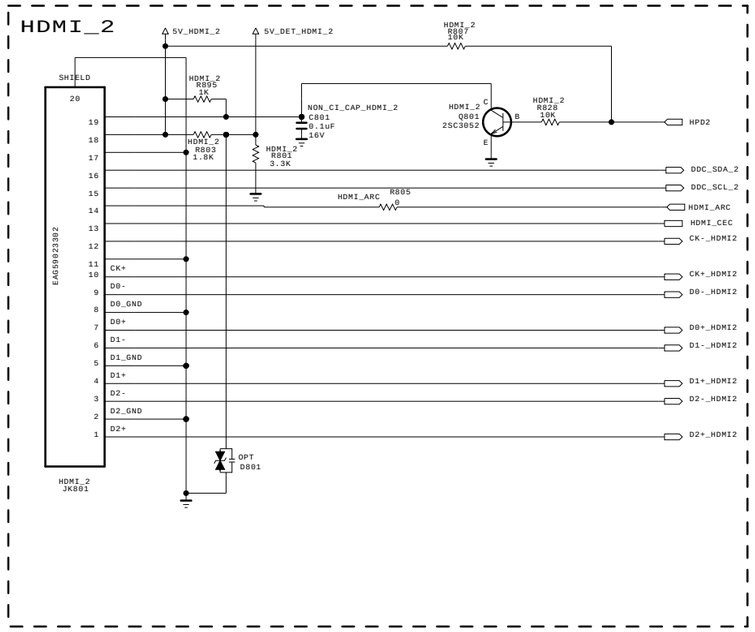






For CEC





THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

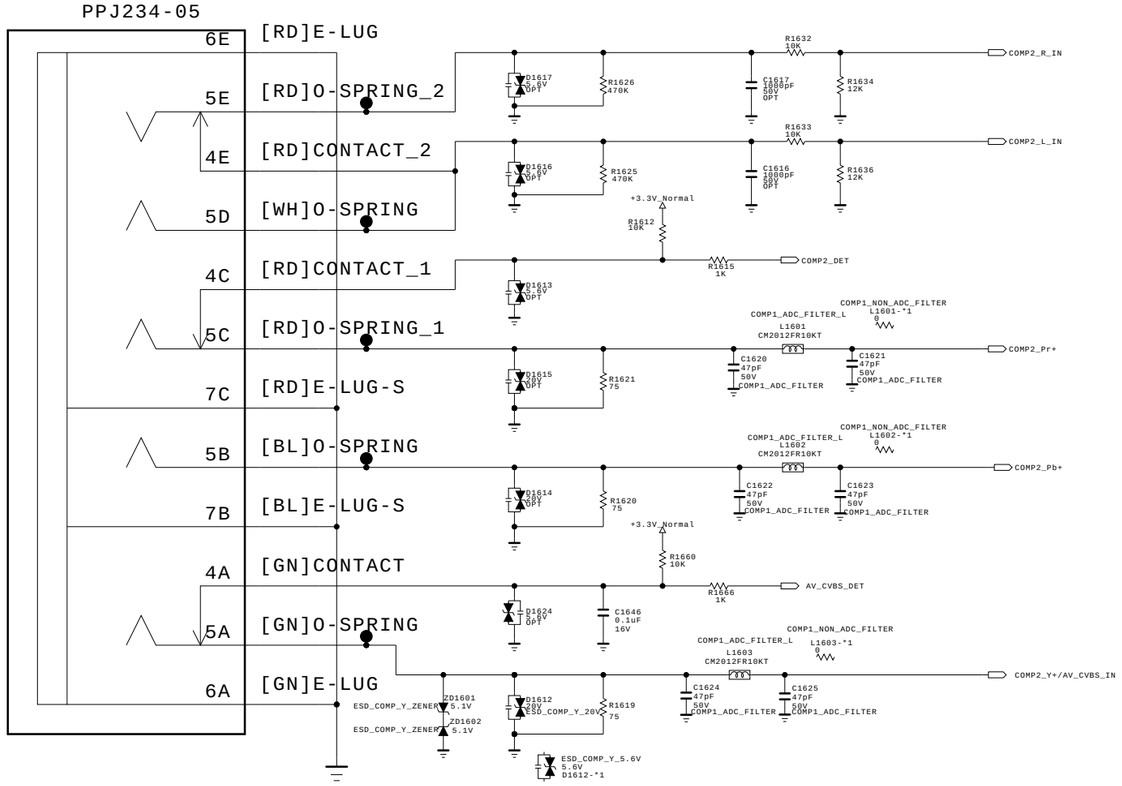
SECRET
LGElectronics

LG ELECTRONICS

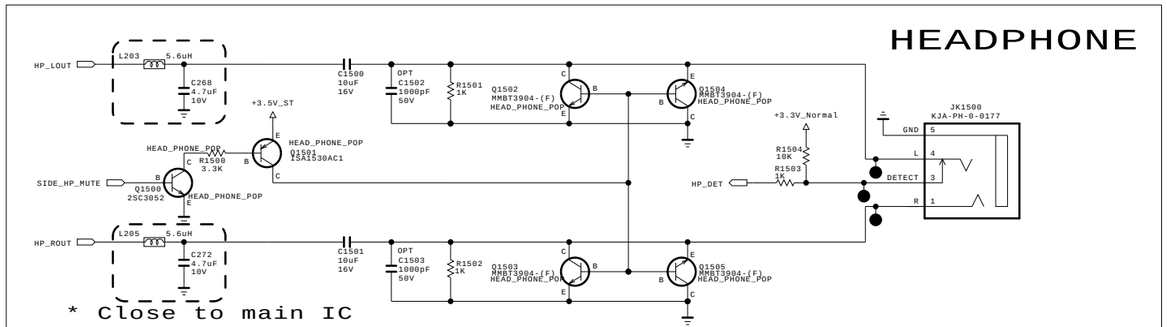
MODEL	GP4L_S7LR2	DATE	2011/08/12
BLOCK	HDMI_2EA(NON SIDE HDMI)	SHEET	53

REAR JACK for non-EU (ERRC)

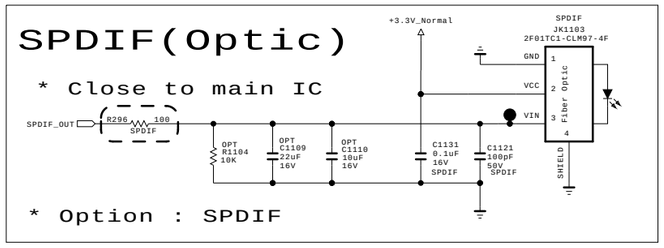
COMPONENT & AV(COMMON)



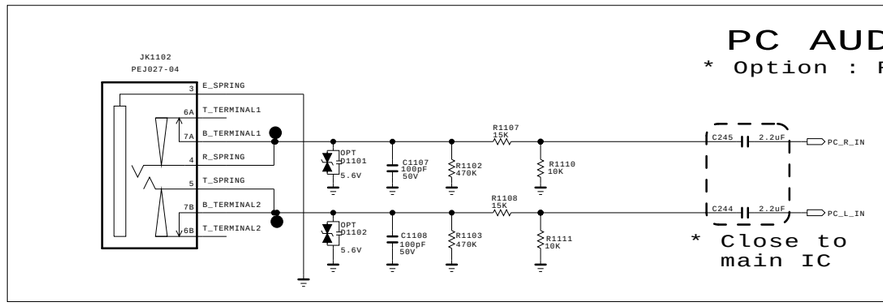
HEADPHONE



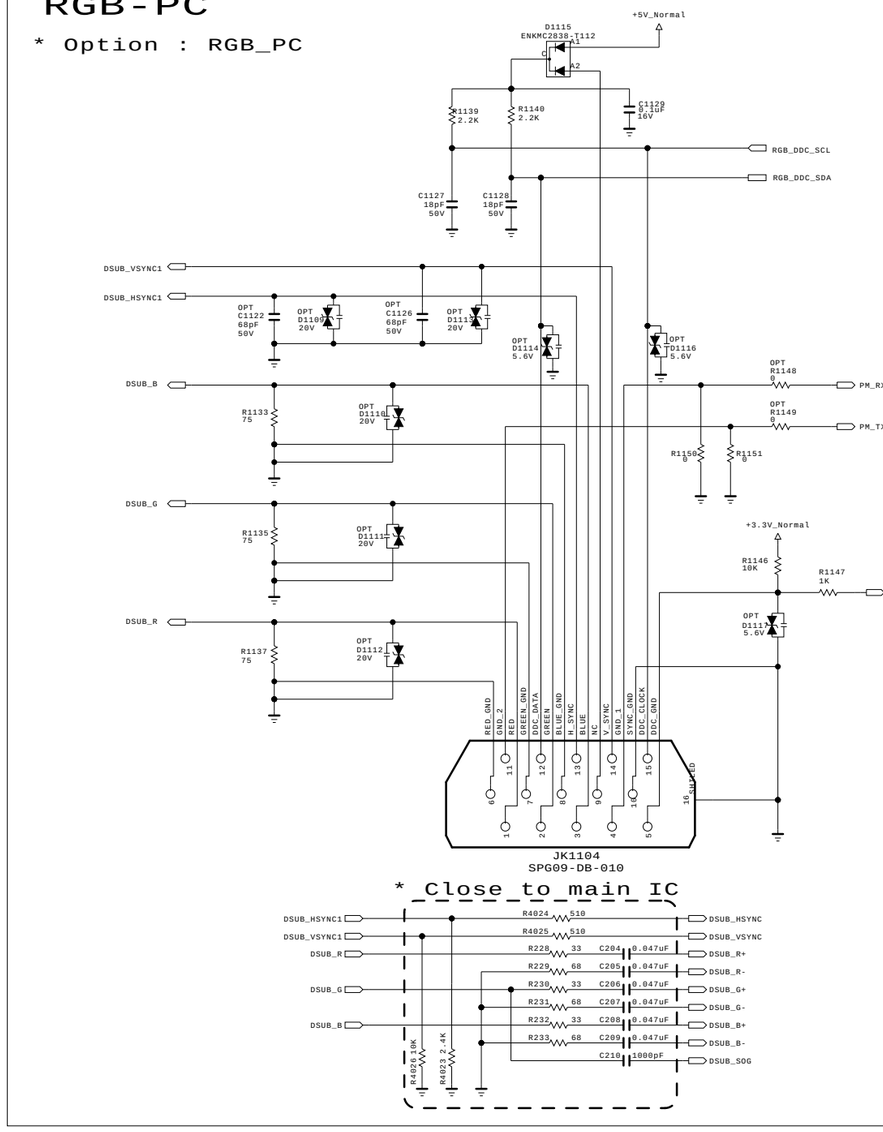
SPDIF(Optic)



PC AUDIO



RGB-PC



SC1/COMP1_R_IN
SC1/COMP1_L_IN
SC1_R+/COMP1_Pr+
SC1_B+/COMP1_Pb+
SC1/COMP1_DET
SC1_G+/COMP1_Y+

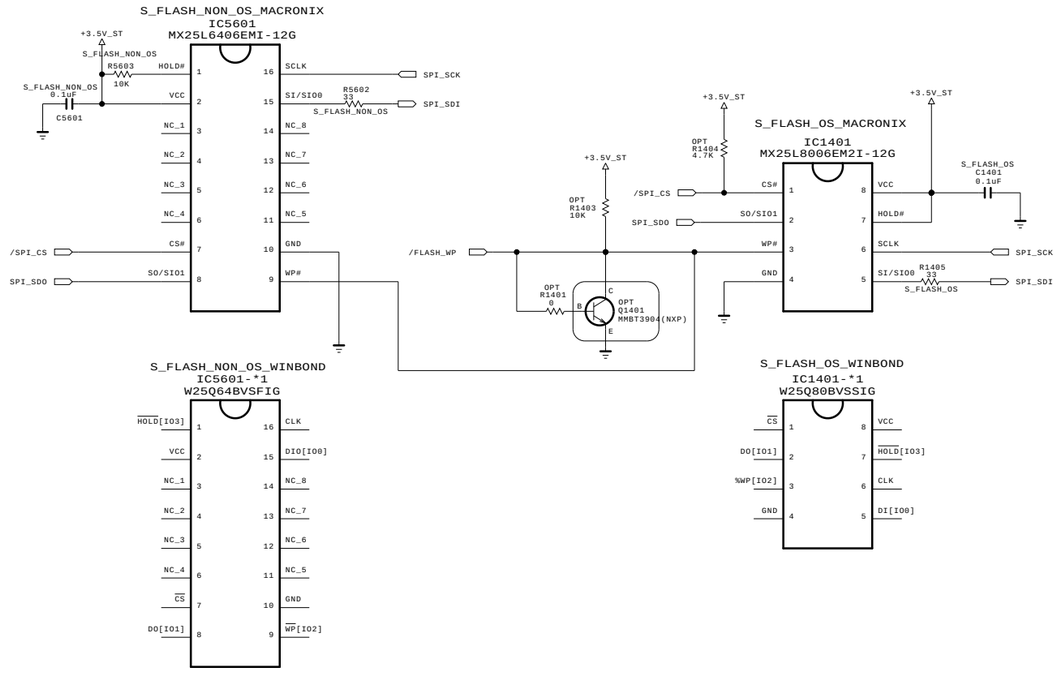
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011.10. 14
BLOCK	REAR_NON_EU_ERRC	SHEET	54

Serial Flash for SPI boot_NON_OS and OS



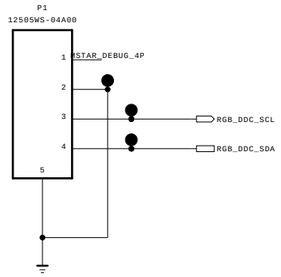
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR	DATE	2011.08.29
BLOCK	Serial FLASH	SHEET	56

MSTART DEBUG_4PIN



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP4L_S7LR2	DATE	2011/09/05
BLOCK	MSTAR DEBUG_4PIN	SHEET	58


LG
Life's Good